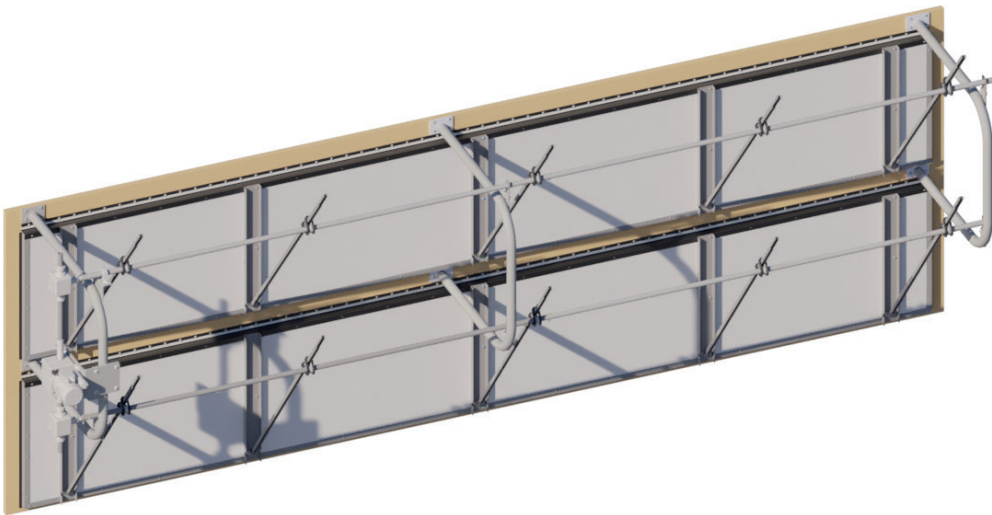


Instruction Manual

HORIZON Tunnel Door System



HORIZON Tunnel Door System

with Actuator

Models: TT36DK10-1R • TT36DK10-2R • TT36DK10-3R •
TT42DK10-1R • TT42DK10-2R • TT42DK10-3R



HORIZON Tunnel Door System with Actuator

Instructions for Use and Maintenance

Thank You:

Thank you for purchasing a Munters HORIZON Tunnel Door System. Munters equipment is designed to be the highest performing, highest quality equipment you can buy. With the proper installation and maintenance it will provide many years of service.

Please Note:

To achieve maximum performance and insure long life from your Munters product it is essential that it be installed and maintained properly. Please read all instructions carefully before beginning installation.

Warranty:

For Warranty claims information see the "Warranty Claims and Return Policy" form QM1021 available from the [Munters Corporation office at 1-800-227-2376 or by e-mail at aghort.info@munters.com](mailto:aghort.info@munters.com).

Conditions and Limitations:

- Products and Systems involved in a warranty claim under the "Warranty Claims and Return Policy" shall have been properly installed, maintained and operated under competent supervision, according to the instructions provided by Munters Corporation.
- Malfunction or failure resulting from misuse, abuse, negligence, alteration, accident or lack of proper installation or maintenance shall not be considered a defect under the Warranty.

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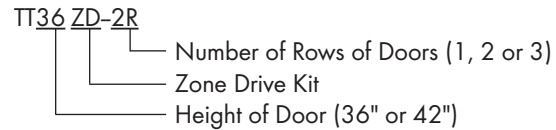
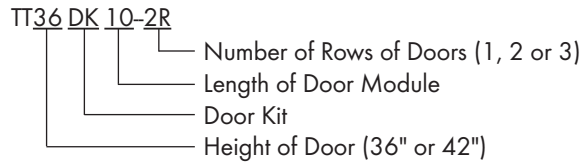
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Unpacking the Equipment

1.

Before beginning installation, check the overall condition of the equipment. Remove packing materials, and examine all components for signs of shipping damage. Any shipping damage is the customer's responsibility and should be reported immediately to your freight carrier. HORIZON Tunnel Door System is shipped with all parts and accessories on one pallet.

1.1 Catalog Number Definition



1.2 Parts List

Munters HORIZON Tunnel Door System is sold in 10' Door Kits (DK), a Zone Drive Kit (ZD) and the Actuator (actuator sold separately). For example: For a system with 2 rows of 36"H. x 40'L. Doors in 1 Zone the customer would receive the following: (4) TT36DK10-2R, (1) TT36ZD-2R and (1) Actuator (actuator sold separately).

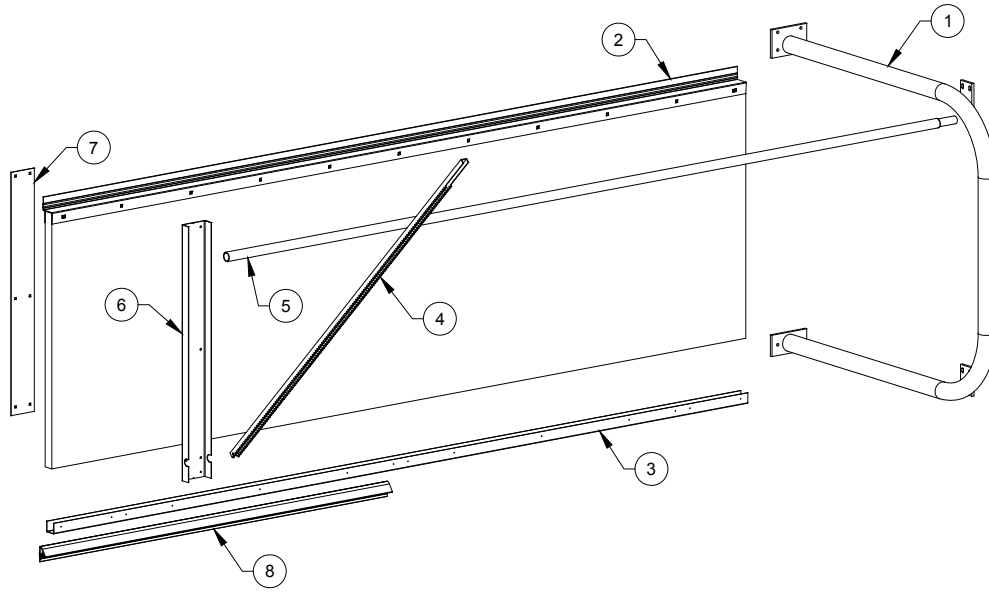
Each TT Door Kit (DK) Includes:

ID	Cat. No.	Qty. -1R	Qty. -2R	Qty. -3R	Description
[1]	AC3303	2	2	4	Frame for TT36-2R Drive Pipe Support, CTD STL GRAY
[2]	AC3453	1	2	3	Door w/ Hinge, 36"H. x 10'L. x 1.5"T., Blk/Wht, TT36
[3]	AC3440	1	2	3	Door Edge Trim, 120"L., TT Series, GZ
[4]	AC3725	2	4	6	Straight Rack, 65"Travel, 73"(1850mm) L., GZ w/ GRS
[5]	AC1415	1	2	3	1" SCHD10 (1.32"O.D.) Pipe x 126"L., SOE, 12GA, GZ
[6]	AC3403	2	4	6	Door Support CHNL Bracket, 36"L., TT36 Series, GZ
[7]	AC3413	2	4	6	Door Backer Plate, 32.75"L., TT36 Series, GZ
[8]	KA2156	2	4	6	Foam Seal, P-Shape w/ TAB, 2.14"W. x 1.31"H. x 60"L., BLK
	→	BH1141	BH1142	BH1143	Bulk Hardware Package: TT Door Kit

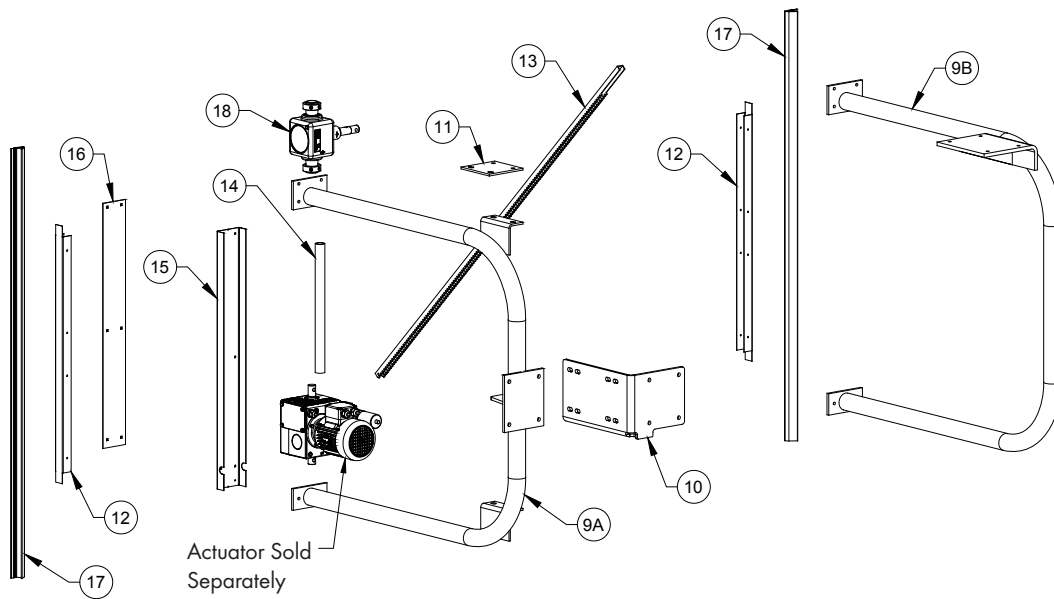
Each TT Zone Drive Kit (ZD) Includes:

ID	Cat. No.	Qty. -1R	Qty. -2R	Qty. -3R	Description
[9A]	AC3363	-	1	1	Frame, Center Actuator Mount, TT36 Multi-Row, CTD GRAY
[9B]	AC3353	1	-	-	Frame, Top Actuator Mount, TT36 1-Row, CTD GRAY
[10]	AC3312	-	1	1	Plate, LA12 Actuator Mount for AC3363/3364, CTD GRAY
[11]	AC3320	-	2	3	Plate, Bearing Adapter, for AC3363/3364, CTD GRAY
[12]	AC3436	1	2	3	Door End Trim, 36"L., TT36 Series, GZ
[13]	AC3725	1	2	3	Straight Rack, 65"Travel, 73"(1850mm) L., GZ w/ GRS
[14]	AC1413	-	1	2	1" SCHD10 (1.32"O.D.) Pipe x 63"L., SOE, 12GA, GZ
[15]	AC3403	1	2	3	Door Support CHNL Bracket, 36"L., TT36 Series, GZ
[16]	AC3413	1	2	3	Door Backer Plate, 32.75"L., TT36 Series, GZ
[17]	KA2156	2	4	6	Foam Seal, P-Shape w/ TAB, 2.14"W. x 1.31"H. x 60"L., BLK
[18]	AC3715	-	2	3	Right Angle Gearbox, Sealed, Clamp Rings for 1" Pipe
	→	BH1101	BH1102	BH1103	Bulk Hardware Package: TT Zone Drive Kit

1.2 Parts (continued)



TT Door Kit (DK)



TT Zone Drive Kit (ZD)

1.2 Parts (continued)

Bulk Hardware Package (BH114x) for TT Door Kit

ID	Cat. No.	BH1141	BH1142	BH1143	Description
[19]	AC3703	2	4	6	Guide Plate, w/Bronze Bushing, 1" Pipe, 3.5"(90mm) to CL, GZ
[20]	AC3441	1	2	3	Flat Joiner Plate, 12"L. TT Series, GZ
	→	HP1551	HP1552	HP1553	Hardware Package: TT36/42, Frame and Pipe Installation
	HP1533	1	2	3	Hardware Package: 10'L. Door Installation
	HP1534	1	2	3	Hardware Package: 10'L. Door, Rack & Pinion Assembly

Hardware Package (HP155x) for TT36/42, Frame and Pipe Installation

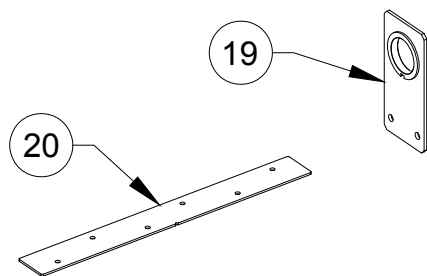
ID	Cat. No.	HP1551	HP1552	HP1553	Description
[A]	KS2466	12	12	24	3/8" x 2" Lag Screw, ZP
[B]	KS1015	4	8	12	1/4"-20 x 3/4" Hex Bolt, ZP
[C]	KW3001	8	16	24	1/4" Type-A Narrow Flat Washer, ZP
[D]	KN1705	4	8	12	1/4"-20 Nylock Nut, ZP
[E]	KS1064	1	2	3	3/8"-16 x 2.25" Hex Bolt, ZP
[F]	KN1709	1	2	3	3/8"-16 Nylock Nut, ZP

Hardware Package (HP1533) for TT 10'L. Door Installation

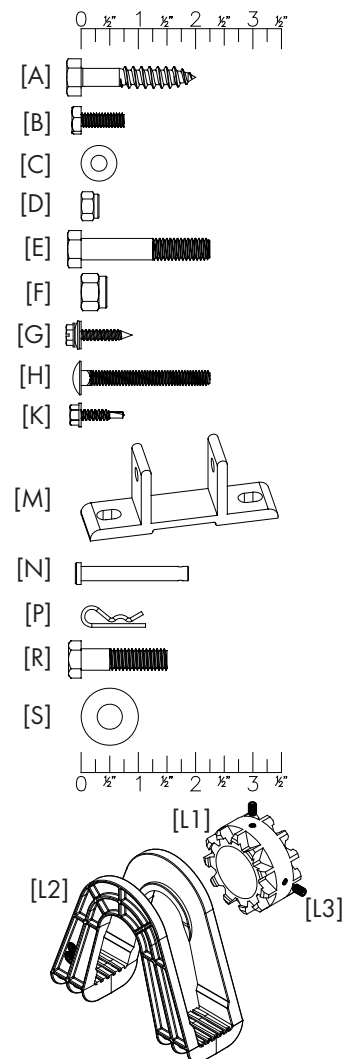
ID	Cat. No.	Qty.	Description
[G]	KS1404	36	#10-14 x 1" Seal Washer Polebarn Screw, ZP
[H]	KS1513	12	1/4"-20 x 2.25" Carriage Bolt, ZP
[D]	KN1705	12	1/4"-20 Nylock Nut, ZP
[K]	KS2282	6	#10-16 x 3/4" HXWSR TEK Screw, SS

Hardware Package (HP1534) for TT 10'L. Door, Rack & Pinion Assembly

ID	Cat. No.	Qty.	Description
[Lx]	AC3720	2	Pinion Gear [L1], Plastic Retainer [L2], Set Screws [L3]
[M]	AC3722	2	Pivoting Connector, Rack to Door, AL
[N]	KP1257	2	Clevis Pin, 1/4"D x 2"L., ZP
[P]	KP1105	2	Hairpin Cotter Pin, 0.59"D x 1.13"L., SS



BH1141/BH1142/BH1143



1.2 Parts (continued)

Bulk Hardware Package (BH110x) for TT Zone Drive Kit

ID	Cat. No.	BH1101	BH1102	BH1103	Description
[21]	AC3706	1	2	2	Straight Coupling, Actuator to 1" Pipe, 3.5" to CL, GZ
[22]	AC3701	-	2	3	Bearing, Ball, 35mm B x 1.56"CL, Set Screws, STL HLDR
[23]	KX1160	1	4	5	Hole Plug, 1.14"Dia. x 1.25"L. x 1.56"Dia. FLG, BLK PLSTC
[24]	KA2024	2	4	6	Grease, For Rack & Pinion, 100G Tube
	→	HP1541	HP1542	HP1543	Hardware Package: TT36ZD/TT42ZD, Frame and Drive Assembly
	HP1537	1	2	3	Hardware Package: TT36/42 Zone Drive Door Installation
	HP1538	1	2	3	Hardware Package: TT36/42 Zone Drive Rack & Pinion Assembly

Hardware Package (HP154x) for TT36ZD/TT42ZD, Frame and Drive Assembly

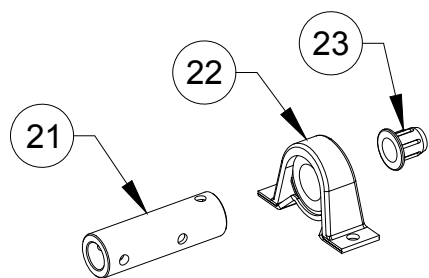
ID	Cat. No.	HP1541	HP1542	HP1543	Description
[A]	KS2466	6	6	12	3/8" x 2" Lag Screw, ZP
[E]	KS1064	3	10	12	3/8"-16 x 2.25" Hex Bolt, ZP
[F]	KN1709	7	22	32	3/8"-16 Nylock Nut, ZP
[R]	KS1022	4	16	20	3/8"-16 x 1.5" Hex Bolt, ZP
[S]	KW3036	8	32	40	3/8" Flat Washer, USS, ZP

Hardware Package (HP1537) for TT36/42 Zone Drive Door Installation

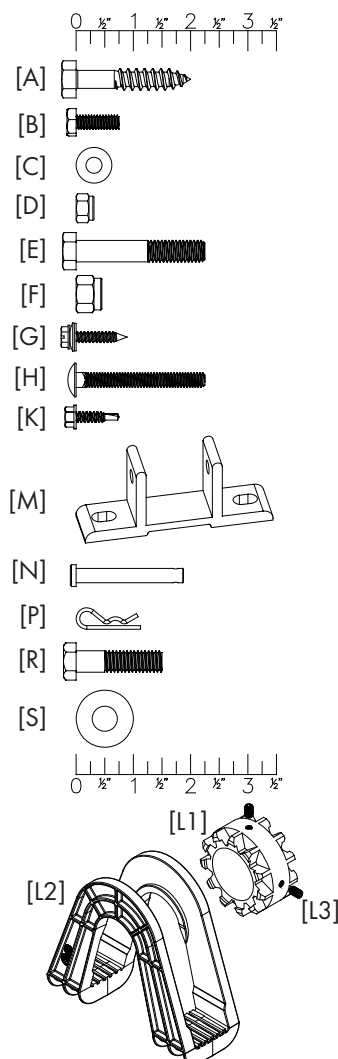
ID	Cat. No.	Qty.	Description
[H]	KS1513	6	1/4"-20 x 2.25" Carriage Bolt, ZP
[D]	KN1705	6	1/4"-20 Nylock Nut, ZP
[K]	KS2282	16	#10-16 x 3/4" HXWSR TEK Screw, SS

Hardware Package (HP1538) for TT36/42 Zone Drive Rack & Pinion Assembly

ID	Cat. No.	Qty.	Description
[Lx]	AC3720	1	Pinion Gear [L1], Plastic Retainer [L2], Set Screws [L3]
[M]	AC3722	1	Pivoting Connector, Rack to Door, AL
[N]	KP1257	1	Clevis Pin, 1/4"D x 2"L., ZP
[P]	KP1105	1	Hairpin Cotter Pin, 0.59"D x 1.13"L., SS



BH1101/BH1102/BH1103



Installation Instructions

2.

2.1 Framing

Step 1

Construct the framed openings to correct size according to Chart A (below) and your HORIZON Tunnel Door System size. See [Chart A](#). If installing a 2 row HORIZON Tunnel Door System use a Treated 2x6 for the Top* Framing, a Treated 2x8 for the Middle Framing and a Treated 2x4 for the Bottom Framing. See [Figure 1A and 1B](#). If installing a 4 or 6 row HORIZON Tunnel Door System use a Treated 2x6 for the Top* Framing, a Treated 2x8's for the Middle Frames and a Treated 2x4 for the Bottom Framing. See [Figure 1C and 1D](#). Use Treated 2x6's for the End Framing. See [Figure 1A, 1B, 1C and 1D](#). For a single row HORIZON Tunnel Door System use a Treated 2x6 for both the Top* and Bottom Framing.

Catalog No.	Length	Height
Example	Door Length -3"	Door Height -1"
(4) TT36DK10-2R (40'L. x 36"H.)	39'-3"	35"

Chart A

***NOTE:**

Top 2x6 Framing **must** be left clear. Do Not run 'J'-Trim on Top 2x6. If 'J'-Trim is needed for siding install extra framing for 'J'-Trim.

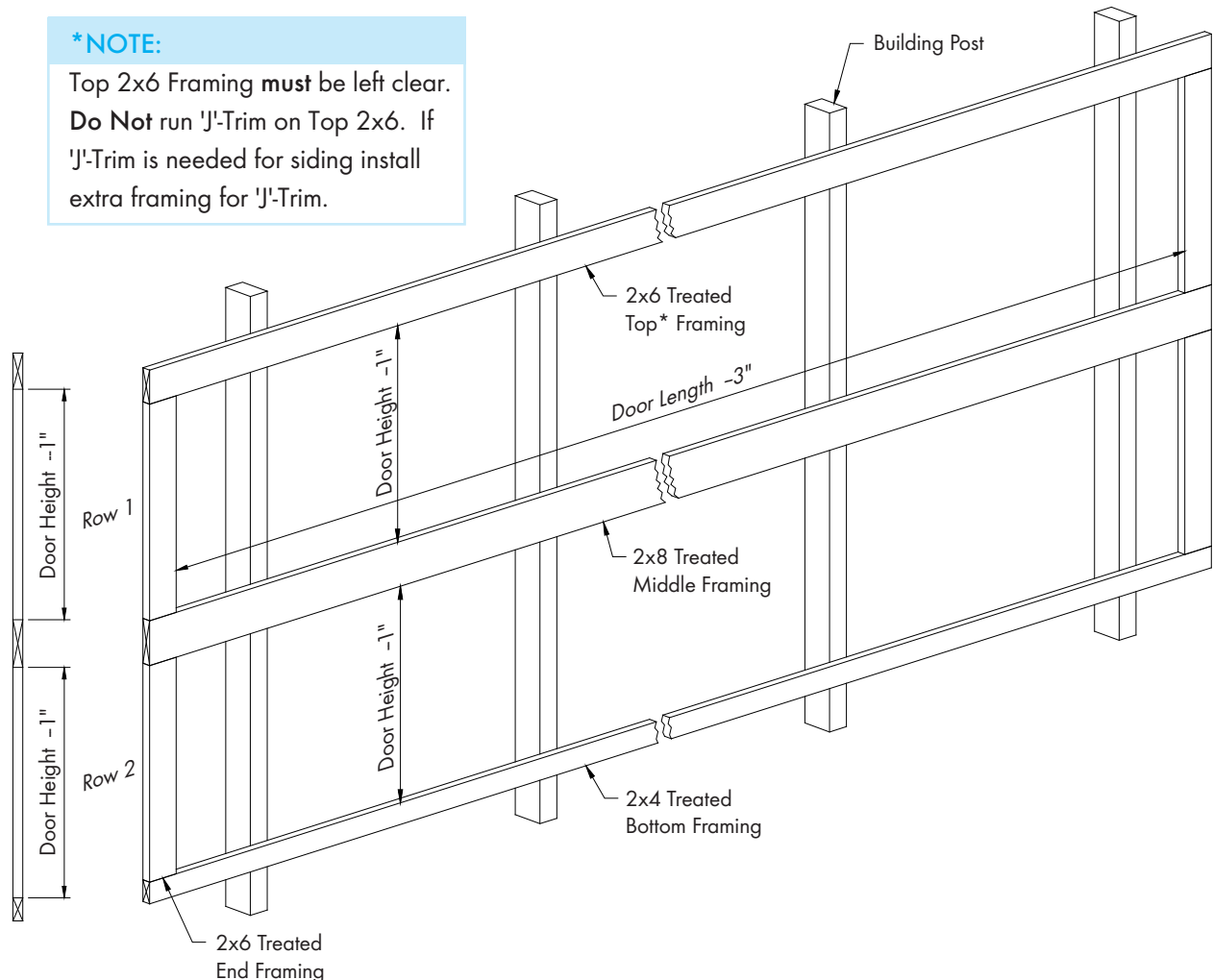


Figure 1A

Figure 1B

***NOTE:**

Top 2x6 Framing must be left clear.
Do Not run 'J'-Trim on Top 2x6. If 'J'-Trim is needed for siding install extra framing for 'J'-Trim.

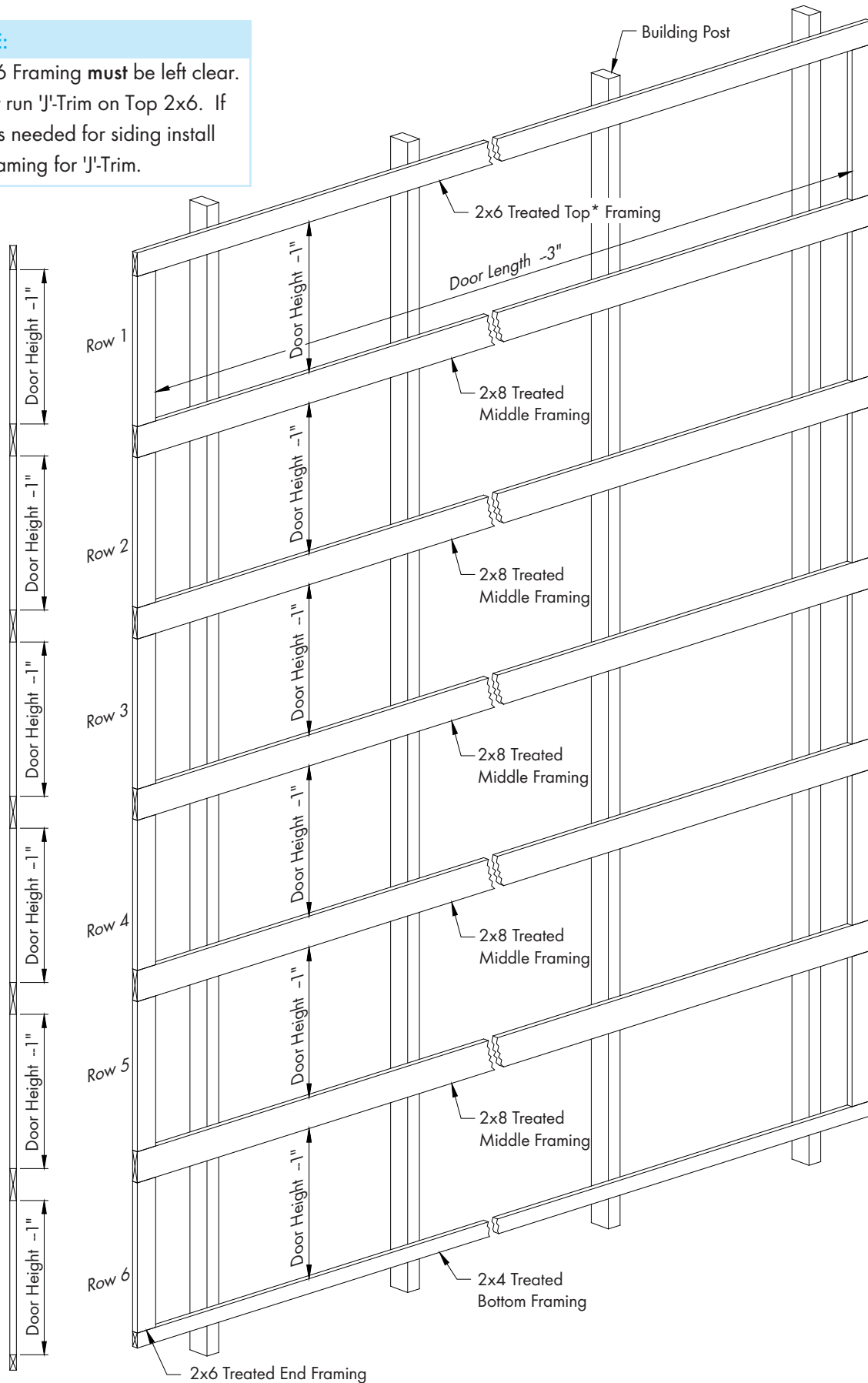


Figure 1C

Figure 1D

2.2 Foam Seal

Step 2

After the Framed Openings are completed, make sure the surface of the 2x lumber is clean and free from debris. Find the P-Shaped Foam Seal [6], which comes in 60" lengths. Starting at the inside edge of the End Framing, peel the back from the adhesive on the back of the Foam Seal and affix to the framing with the top of the "P" flush with the top of the framing. *See Figure 2A and 2B.* For the Foam Seal on the End Framing, the top of the "P" should be flush with the inside edge of the framing and should run from the inside edge of the Top Framing to the bottom of the Foam Seal on the next frame member. *See Figure 2A and 2B.*

Step 3

Continue attaching the P-Shaped Foam Seal until there is Foam Seal attached to 3 sides of each Framed Opening. Once the Foam Seal is completely attached, go back and permanently attached to the framing using Staples or Nails in the nailing groove of the Foam Seal Flap. Staples or Nails are not provided and should be spaced every 4" – 6". *See Figure 2A and 2B.*

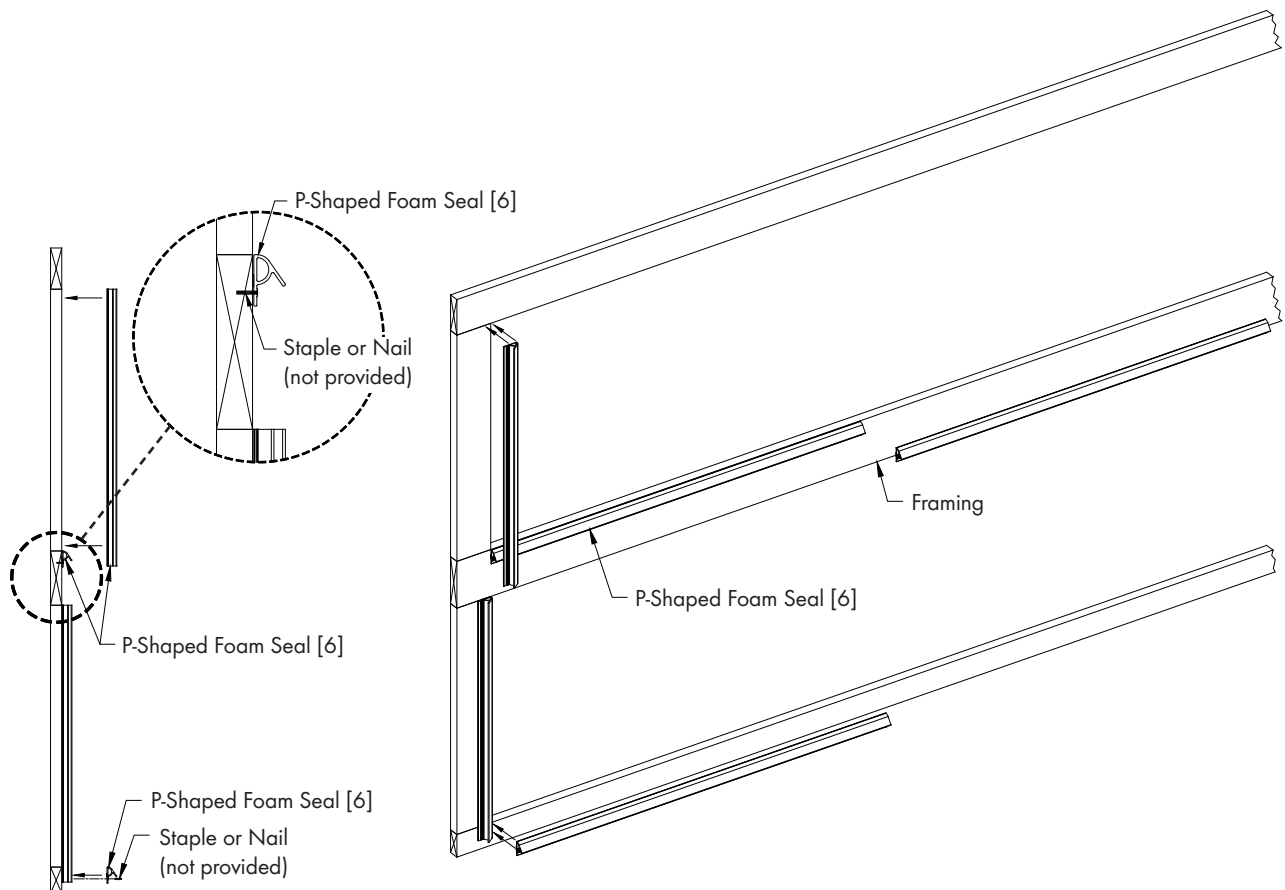


Figure 2A

Figure 2B

2.3 Door Assembly

Step 4

Each row of Tunnel Doors consists of (1) Left Door, several Middle Doors and (1) Right Door. The number of Middle Doors depends on the length of the run of Tunnel Doors. For example, if the run of Tunnel Doors is 40'L. then there is (1) Left Door, (2) Middle Doors and (1) Right Door. If the run is 60'L. then there is (1) Left Door, (4) Middle Doors and (1) Right Door. In the next steps all the doors will be assembled before installing them to the framed openings. See [Figure 3](#).

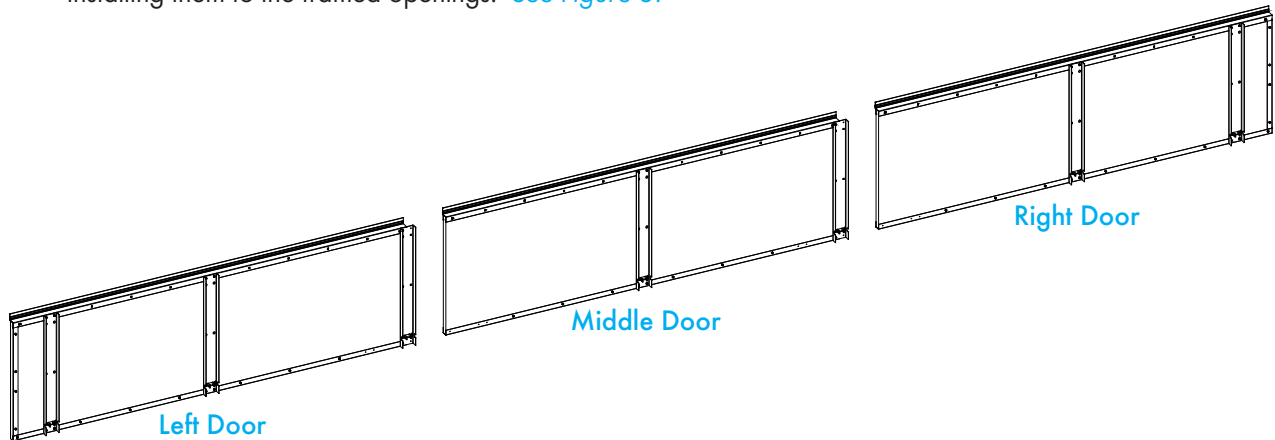


Figure 3

2.4 Left Door Assembly

Step 5

Find the Door Edge Trim [3] and slide it onto the bottom edge of the Tunnel Door and secure it with (14) TEK Screws [K] through the (6) single holes in the middle area of the Door Edge Trim and the left most hole. See [Figure 4](#).

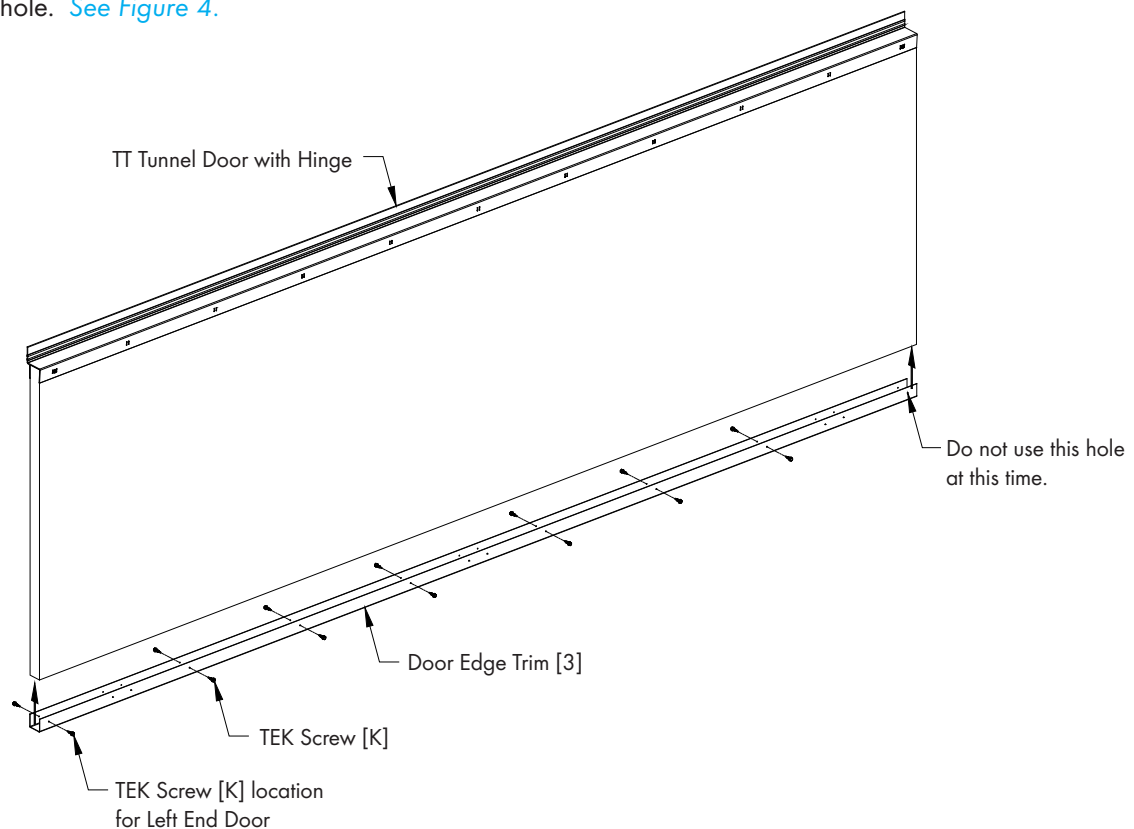


Figure 4

Step 6

Slide a Door End Trim [12] over the Left Door and secure in place with (8) TEK Screws [K]. See Figure 5.

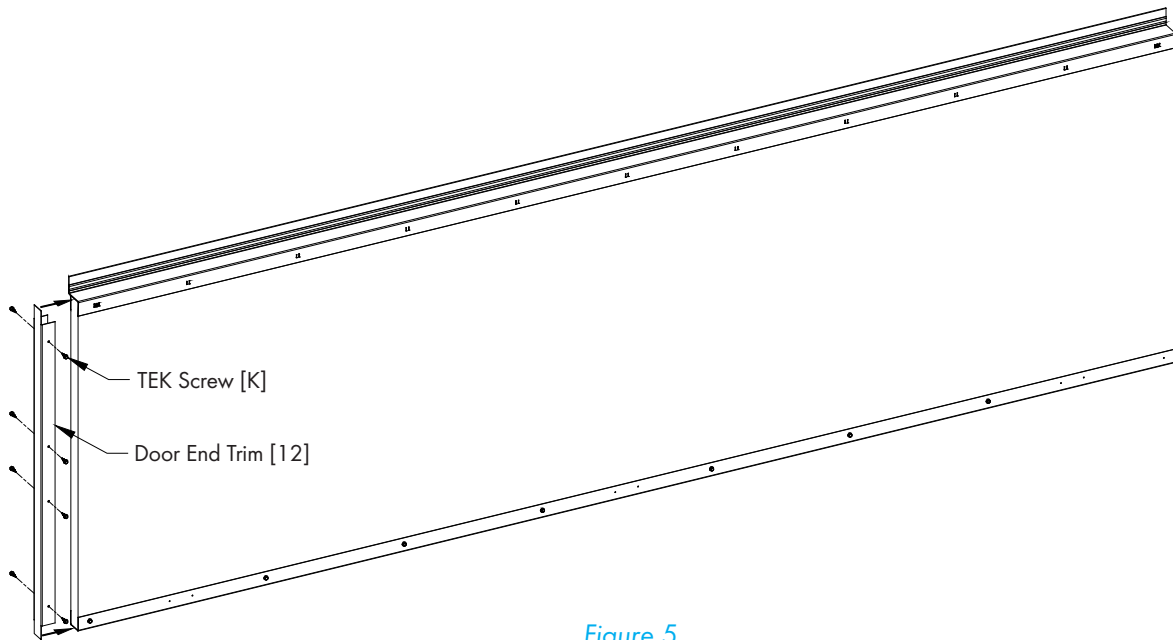


Figure 5

Step 7

For the Left Door, attach a Door Support CHNL Bracket [6] to the left pair and center pair of holes in the Door Edge Trim using (4) TEK Screws [K] per Bracket. See Figure 6. Then attach a 3rd Door Support CHNL Bracket [6] at the right end of the Tunnel Door, so that half of the Bracket is on the Door and the other half of the Bracket hangs off the end. See Figure 6. Make sure the End of the Bracket with the Notches in the flanges is down near the Door Edge Trim.

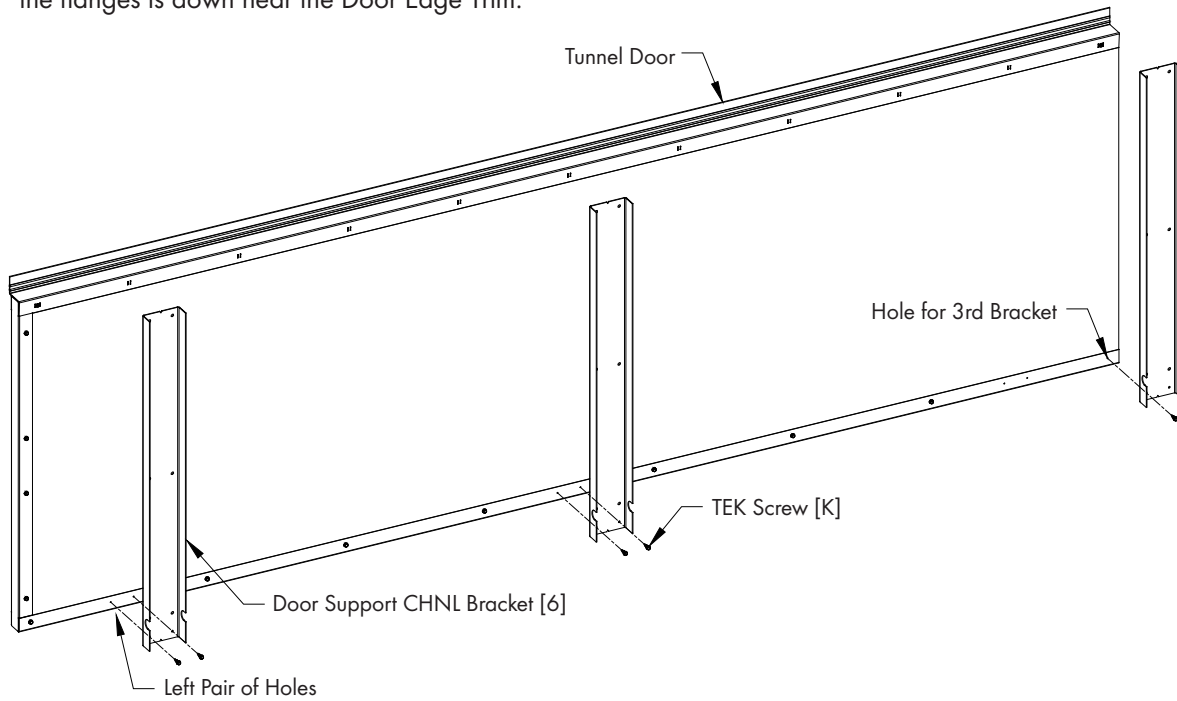


Figure 6

Step 8

Drill a $\frac{3}{32}$ " hole through the Tunnel Door using the Holes in the Door Support CHNL Bracket [6] as a guide. See Figure 7. The left and center brackets have (6) holes to be drilled and the right bracket has (3) holes to be drilled.

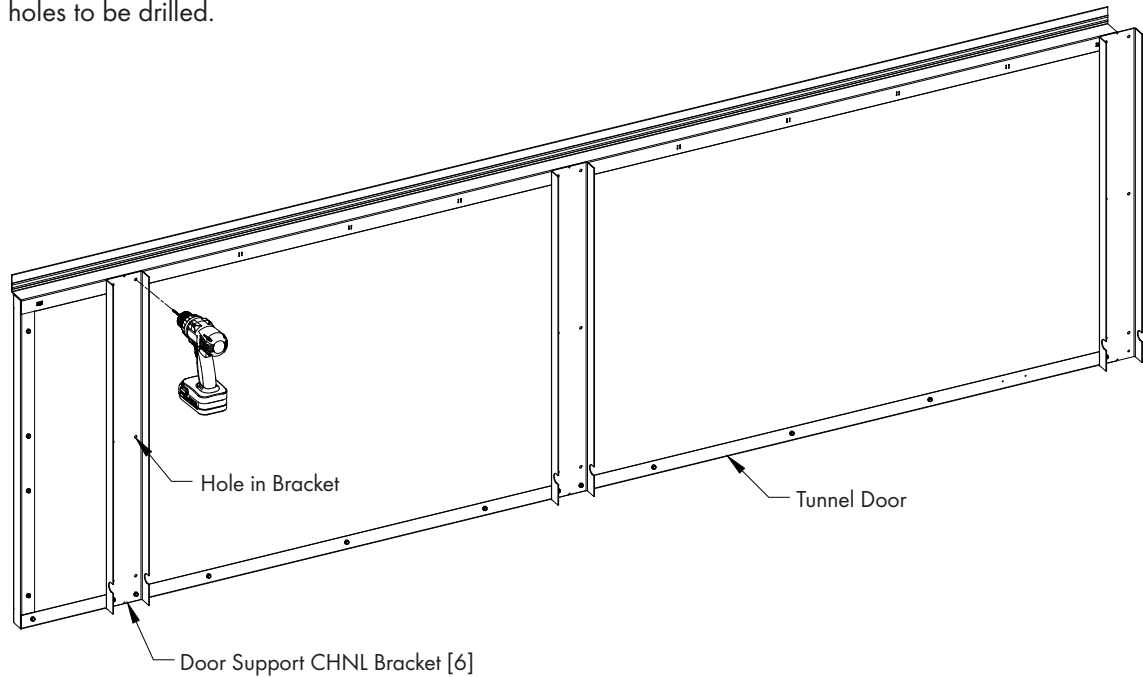


Figure 7

Step 9

Locate Door Backer Plate [7] and fasten to back of Tunnel Door in line with Door Support CHNL Bracket [6] using (4) Carriage Bolts [H] and Nylock Nuts [D] in the upper (4) holes for the left and center Brackets. The right Bracket only gets (2) Bolts and Nuts. See Figure 8. Secure the Pivoting Connector [M] to the Bottom Pair of holes in Door Support CHNL Bracket using (2) Carriage Bolts [H] and Nylock Nuts [D]. The right Door only gets (1) Bolt and Nut to secure the Pivoting Connector [M]. See Figure 8. Leave the Bolts and Nuts in the right Bracket slightly loose. Tighten the other (12) Bolts and Nuts.

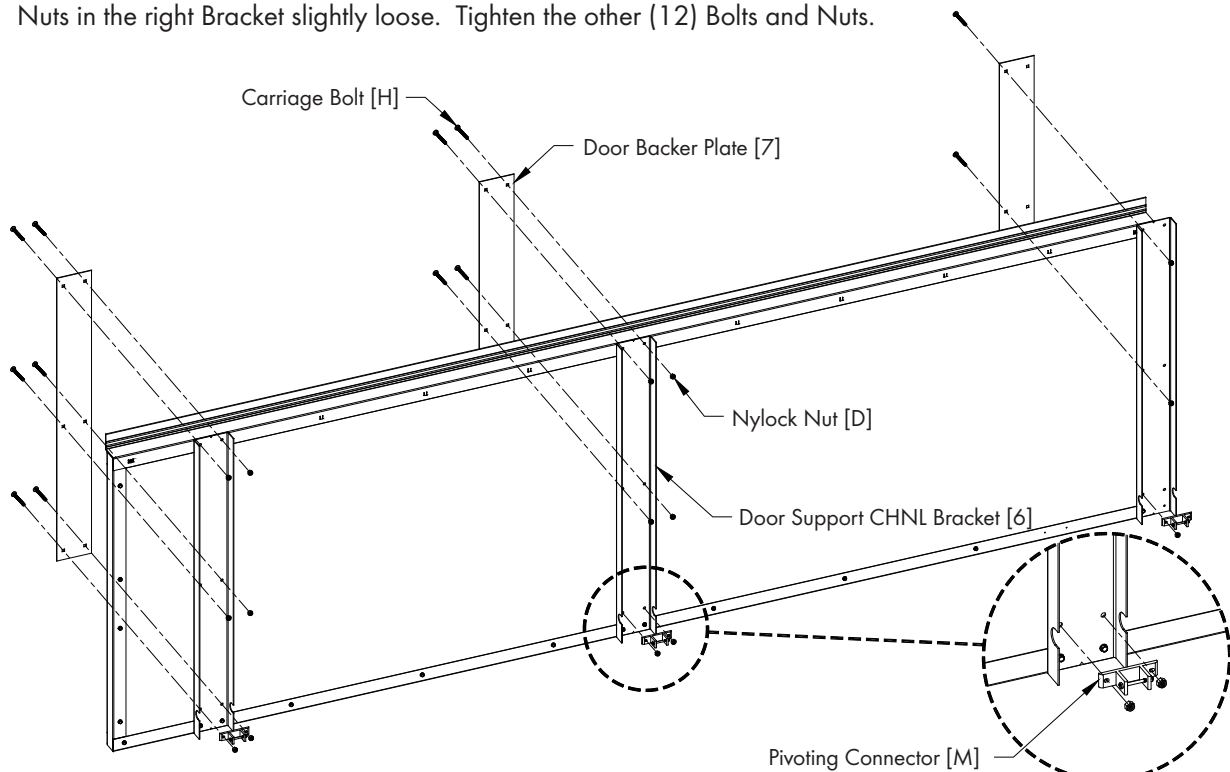


Figure 8

2.5 Middle Door Assembly

Step 10

Find the Door Edge Trim [3] and slide it onto the bottom edge of the Tunnel Door and secure it with (12) TEK Screws [K] through the (6) single holes in the middle area of the Door Edge Trim, leave the left most and right most holes empty. [See Figure 9.](#)

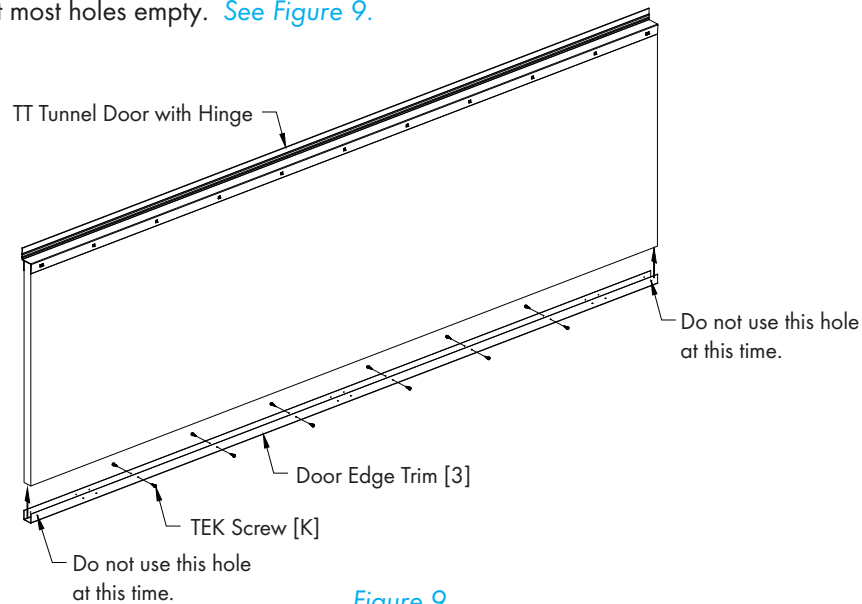


Figure 9

Step 11

For the Middle Door, attach a Door Support CHNL Bracket [6] to the center pair of holes in the Door Edge Trim using (4) TEK Screws [K]. [See Figure 10.](#) Then attach a 2nd Door Support CHNL Bracket [6] at the right end of the Tunnel Door, so that half of the Bracket is on the Door and the other half of the Bracket hangs off the end. [See Figure 10.](#) Make sure the End of the Bracket with the Notches in the flanges is down near the Door Edge Trim.

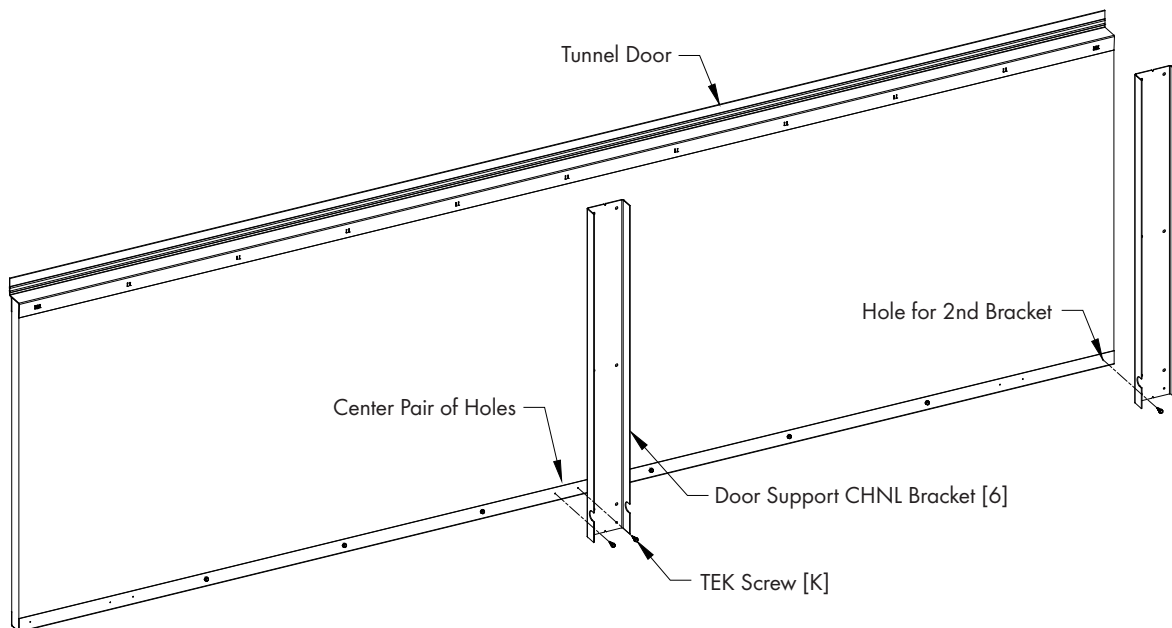


Figure 10

Step 12

Drill a $\frac{3}{32}$ " hole through the Tunnel Door using the Holes in the Door Support CHNL Bracket [6] as a guide. See Figure 11. The center bracket has (6) holes to be drilled and the right bracket has (3) holes to be drilled.

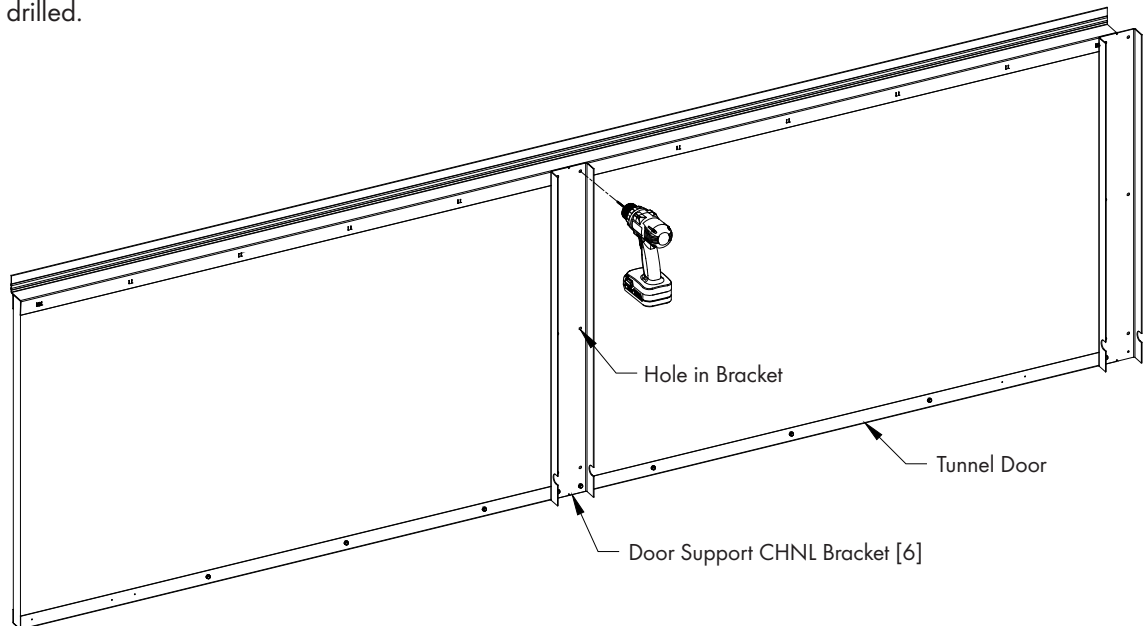


Figure 11

Step 13

Locate Door Backer Plate [7] and fasten to back of Tunnel Door in line with Door Support CHNL Bracket [6] using (4) Carriage Bolts [H] and Nylock Nuts [D] in the upper (4) holes for the left and center Brackets. The right Bracket only gets (2) Bolts and Nuts. See Figure 12. Secure the Pivoting Connector [M] to the Bottom Pair of holes in Door Support CHNL Bracket using (2) Carriage Bolts [H] and Nylock Nuts [D]. The right Bracket only gets (1) Bolt and Nut to secure the Pivoting Connector [M]. See Figure 12. Leave the Bolts and Nuts in the right Bracket slightly loose. Tighten the other (6) Bolts and Nuts.

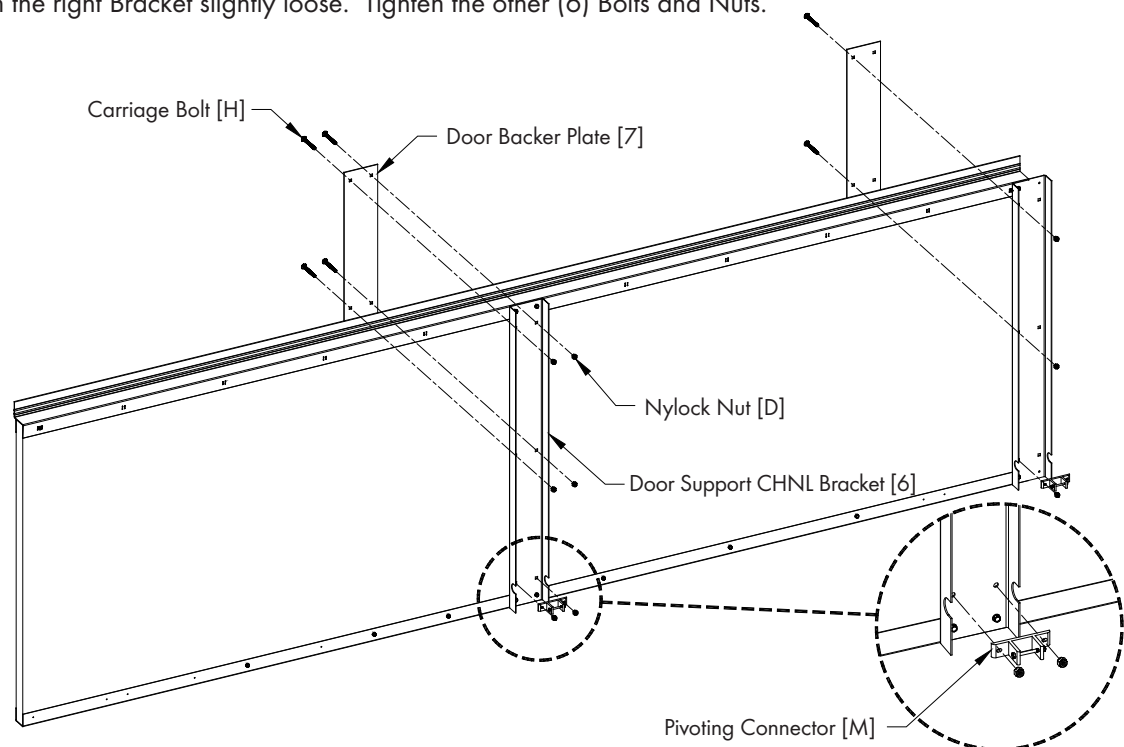


Figure 12

2.6 Right Door Assembly

Step 14

Find the Door Edge Trim [3] and slide it onto the bottom edge of the Tunnel Door and secure it with (14) TEK Screws [K] through the (6) single holes in the middle area of the Door Edge Trim and the right most hole. See Figure 13.

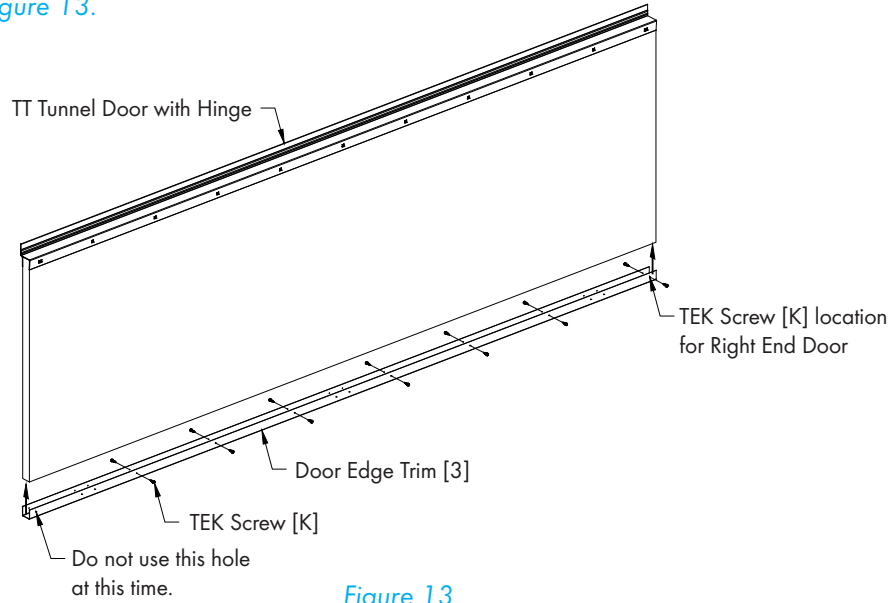


Figure 13

Step 15

Slide a Door End Trim [12] over the Left Door and secure in place with (8) TEK Screws [K]. See Figure 14.

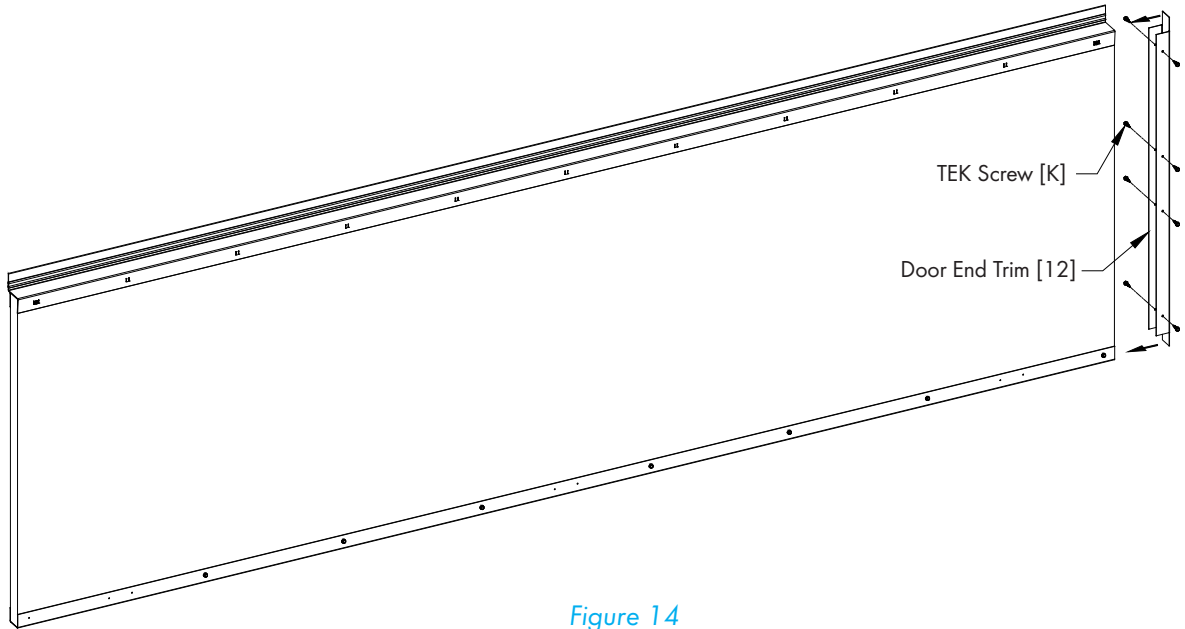


Figure 14

Step 16

For the Right Door, attach a Door Support CHNL Bracket [6] to the right pair and center pair of holes in the Door Edge Trim using (4) TEK Screws [K] per Bracket. See [Figure 15](#). Make sure the End of the Bracket with the Notches in the flanges is down near the Door Edge Trim.

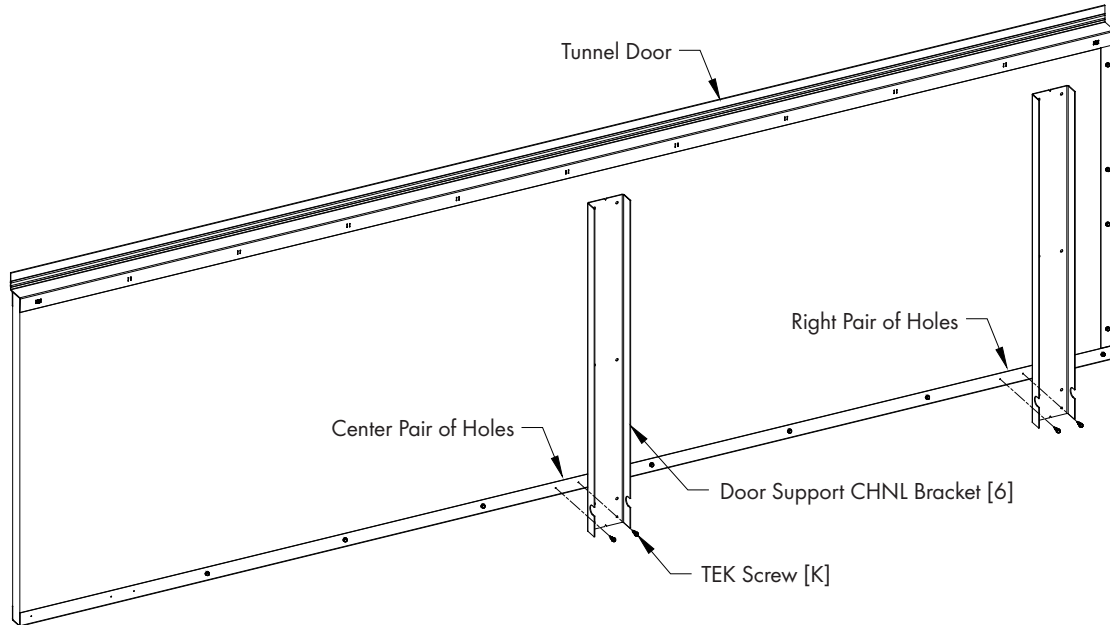


Figure 15

Step 17

Drill a $\frac{3}{32}$ " hole through the Tunnel Door using the Holes in the Door Support CHNL Bracket [6] as a guide. See [Figure 16](#). The center and right brackets have (6) holes to be drilled.

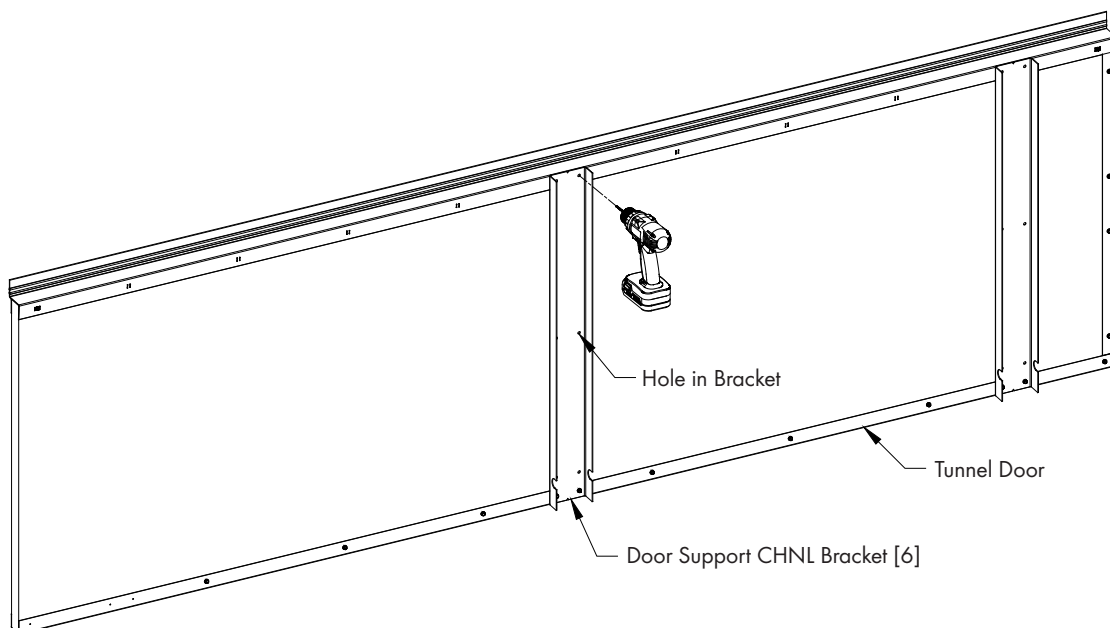


Figure 16

Step 18

Locate Door Backer Plate [7] and fasten to back of Tunnel Door in line with Door Support CHNL Bracket [6] using (4) Carriage Bolts [H] and Nylock Nuts [D] in the upper (4) holes for the center and right Brackets. See Figure 17. Secure the Pivoting Connector [M] to the Bottom Pair of holes in Door Support CHNL Bracket using (2) Carriage Bolts [H] and Nylock Nuts [D]. See Figure 17.

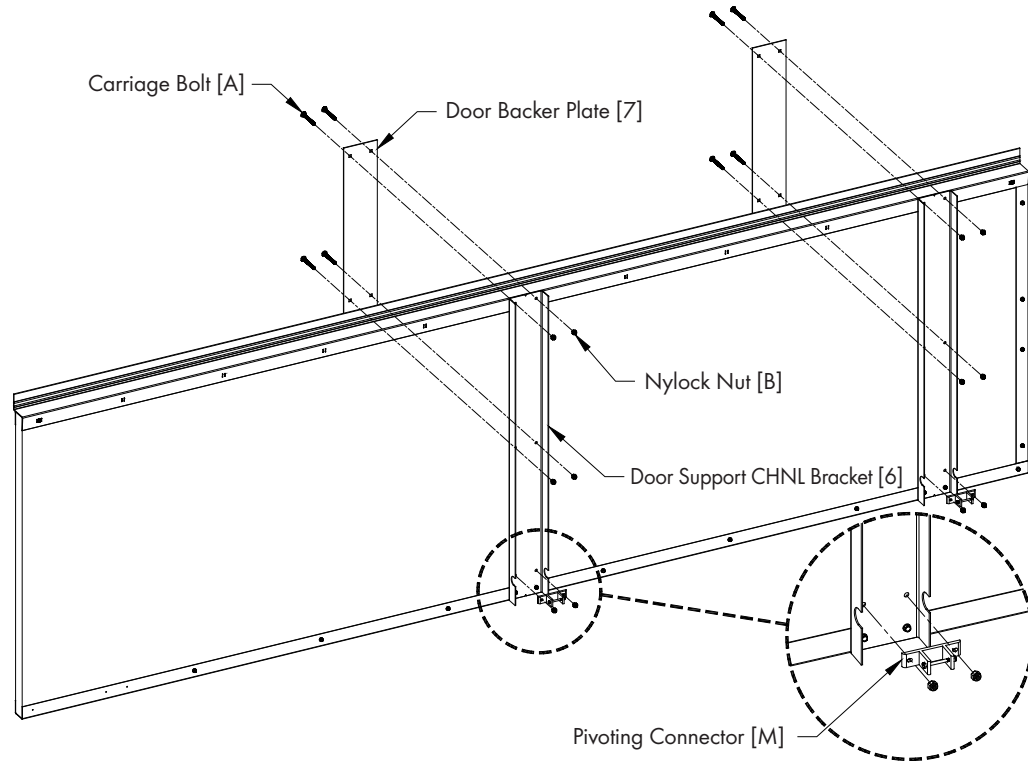


Figure 17

2.7 Door Installation

Step 19

To start hanging the Tunnel Doors, start with the top (1st) row of doors and snap a chalk line $1\frac{1}{4}$ " up from the bottom edge of the Top Framing piece. Then hold a Left Tunnel Door in place with the Top Edge of the Tunnel Door Hinge aligned with chalk line and the End of the Door overlapping the End Framing by $1\frac{1}{2}$ " and attach Left Tunnel Door to Framing using Polebarn Screws [G]. The first screw should be 2" from the end and space the rest of the screws 4" apart. See Figure 18.

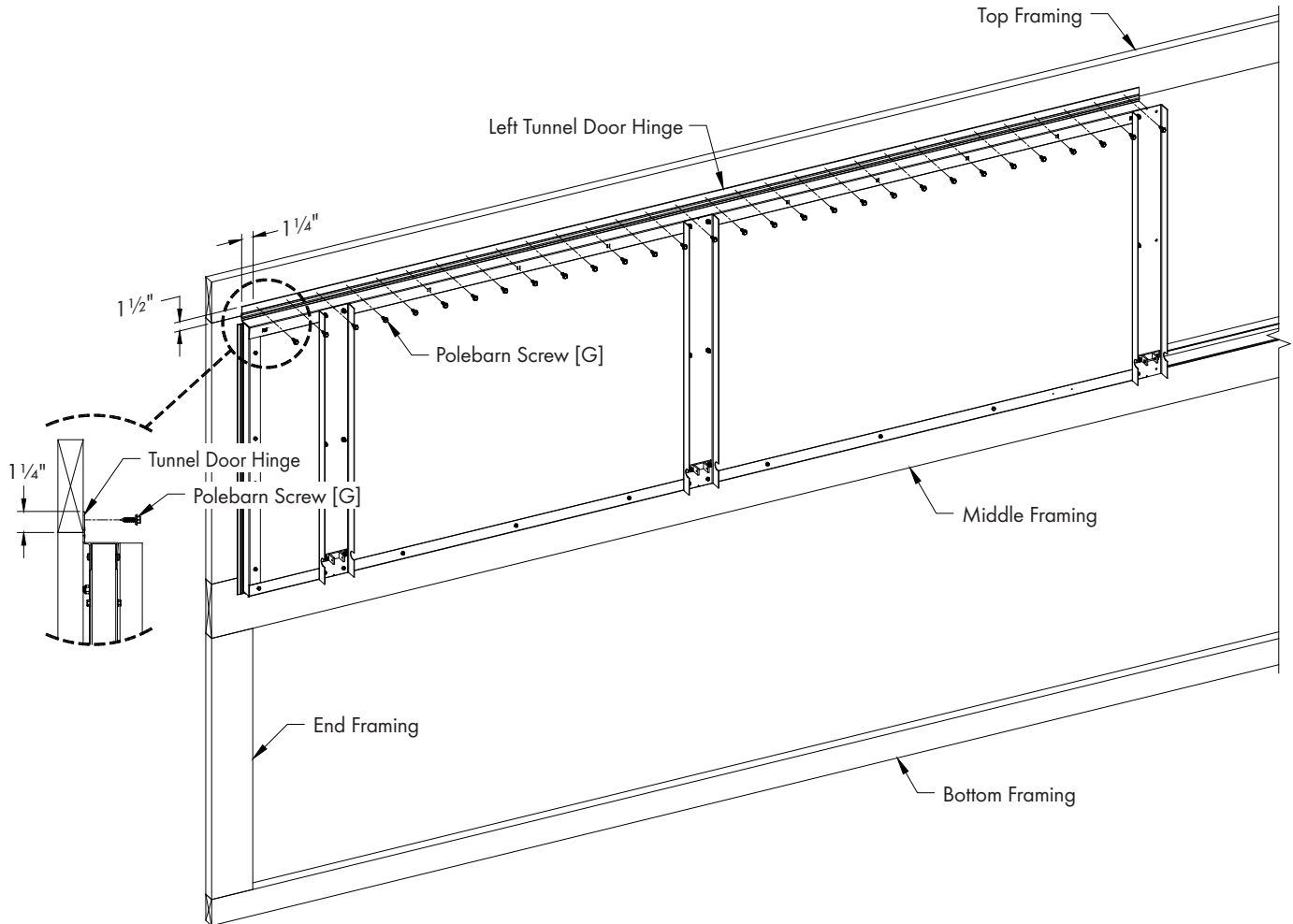


Figure 18

Step 20

Locate a Middle Tunnel Door, apply a Bead of Caulk (not provided) to the left end of the Middle Tunnel Door and carefully slide left end of Middle Tunnel Door in between the Door Support CHNL Bracket and Door Backer Plate on the end of Left Door. Align Middle Tunnel Door Hinge to chalk line and hold firmly against Left Tunnel Door and attach to framing using Polebarn Screws [G] spaced 4" apart. See Figure 19.

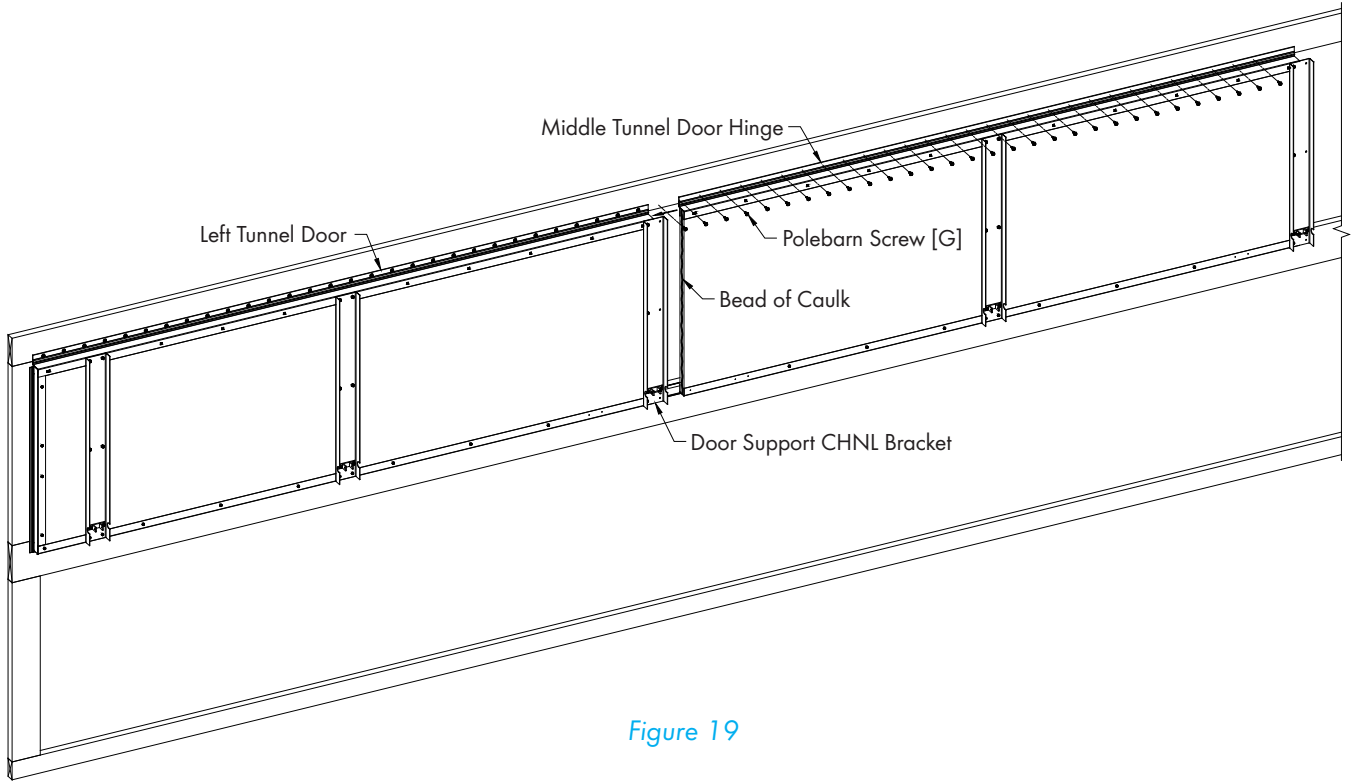


Figure 19

Step 21

Secure Door Support CHNL Bracket from Left Door to Middle Door using (2) TEK Screws [K]. Then using the holes as a guide, drill (3) 3/32" holes through Middle Door. See Figure 20.

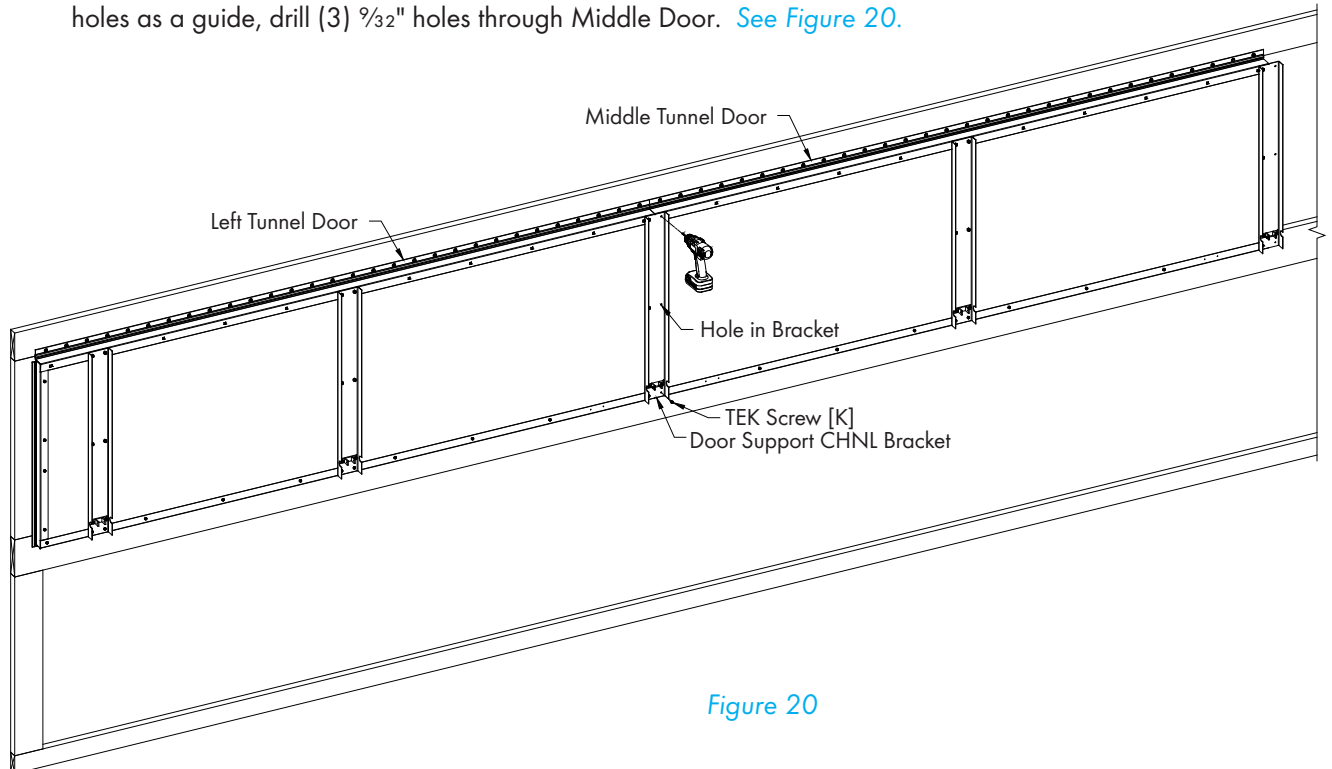


Figure 20

Step 22

Secure Left and Middle Doors together by inserting (2) Carriage Bolts [H] through the (2) upper Holes and securing with Nuts [D]. Another Carriage Bolt [H] goes through the Pivoting Connector and secures with Nut [D]. See [Figure 21](#). Apply a bead of caulk to the joint between doors at the hinge and the top of the doors.

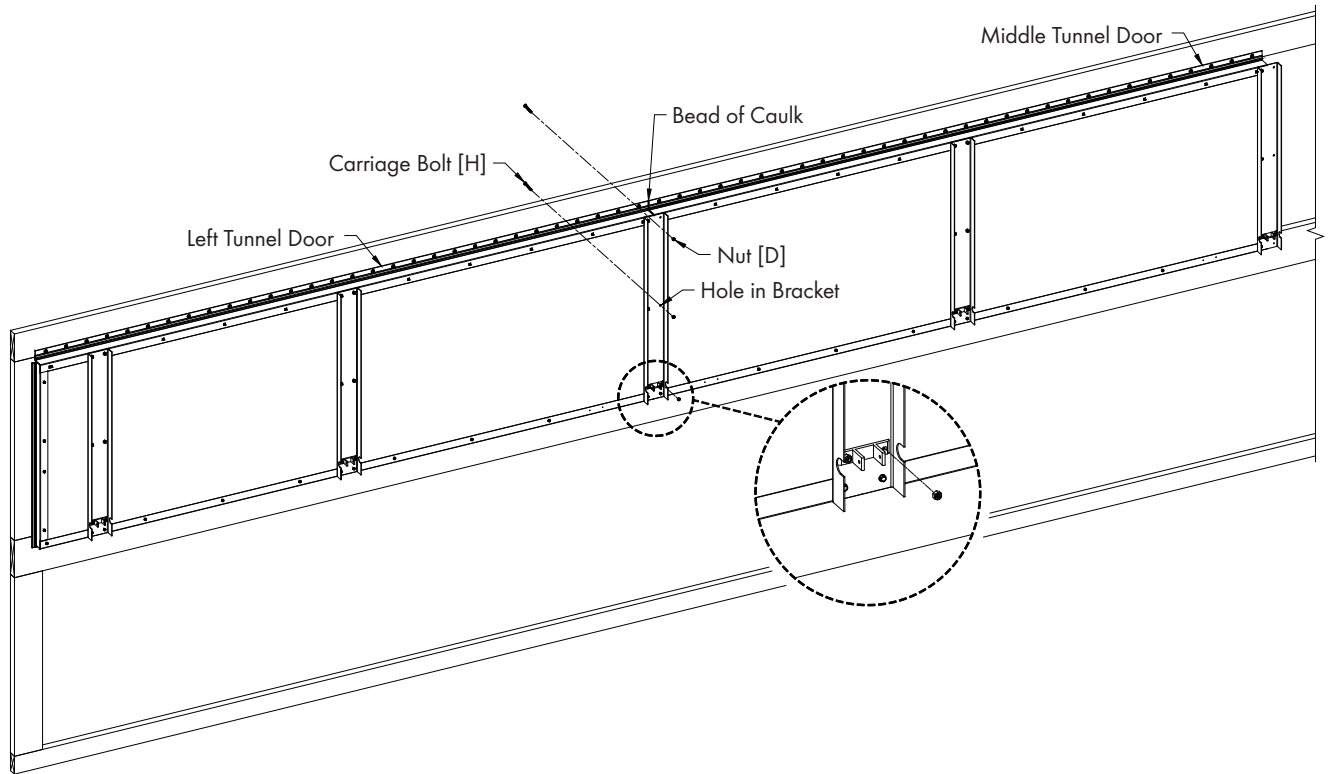


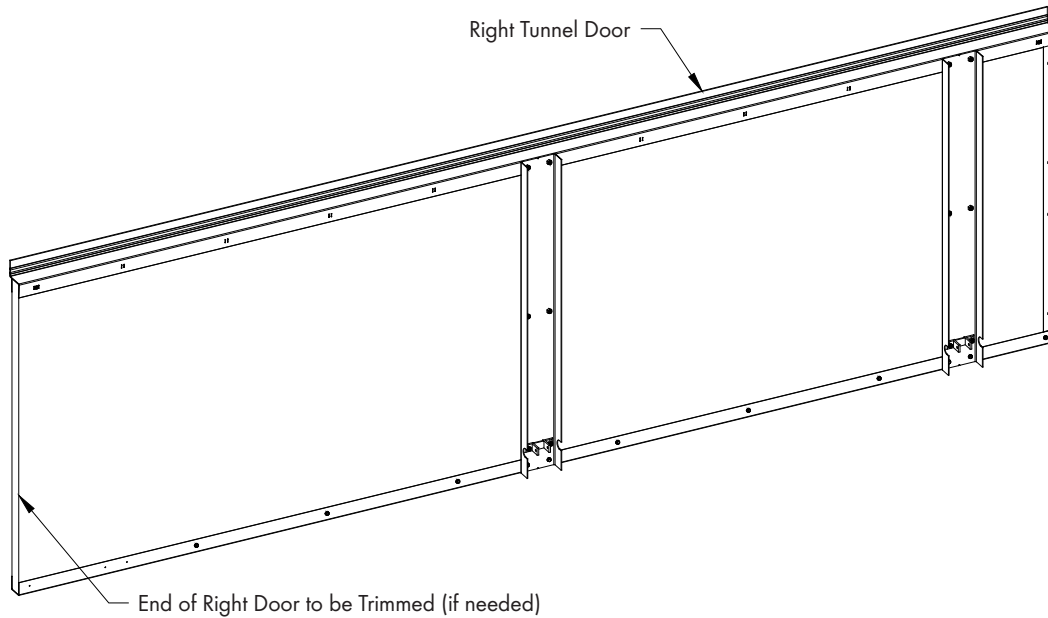
Figure 21

Step 23

Repeat [Steps 20, 21 and 22](#) for the remainder of the Middle Doors in the row until you just have the Right Tunnel Door to install.

Step 24

Locate a Right Tunnel Door. When the Right Tunnel Door is installed, tight against the last Middle Door, it should overlap the right End Framing by 1 1/2". If needed, the left end of the Right Tunnel Door may be trimmed to allow proper fit and overlap. See Figure 22.



Step 25

Locate a Right Tunnel Door, apply a Bead of Caulk (not provided) to the left end of the Right Tunnel Door and carefully slide left end of Right Tunnel Door in between the Door Support CHNL Bracket and Door Backer Plate on the end of Middle Door. Align Right Tunnel Door Hinge to chalk line and hold firmly against Middle Tunnel Door and attach to framing using Polebarn Screws [G] spaced 4" apart. See Figure 23.

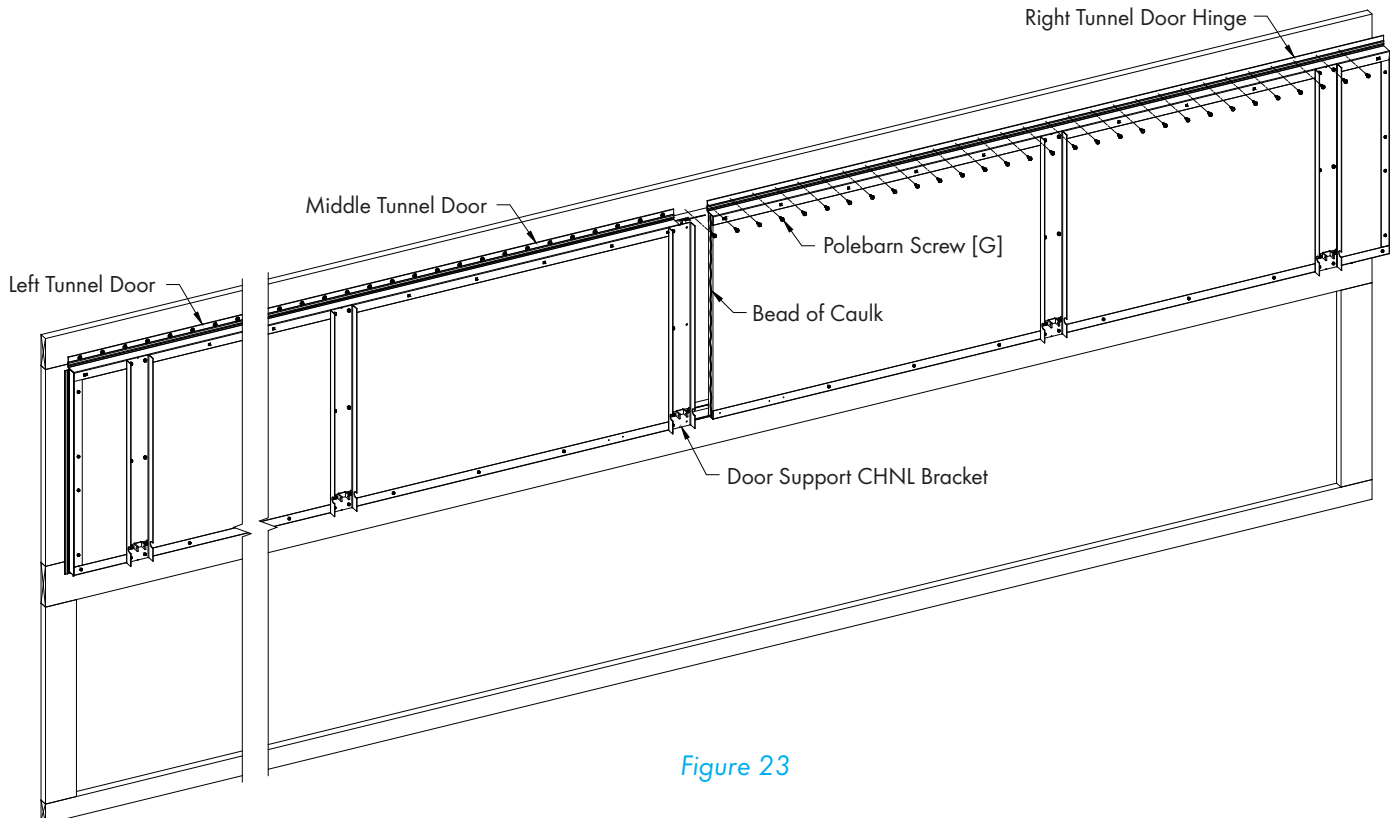


Figure 23

Step 26

Secure Door Support CHNL Bracket from Middle Door to Right Door using (1) TEK Screws [G]. Then using the square holes as a guide, drill (3) $\frac{3}{32}$ " holes through Right Door. See Figure 24.

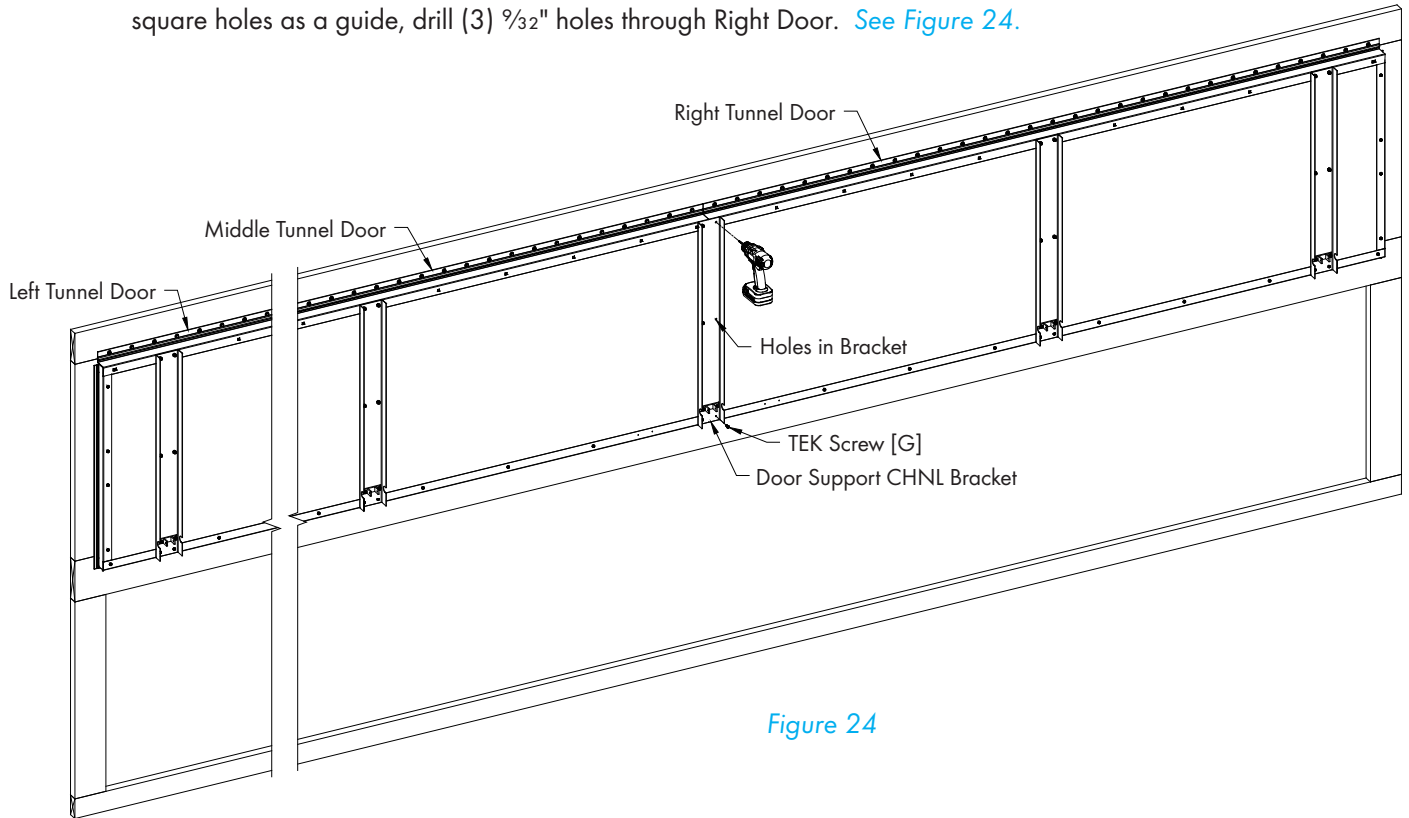


Figure 24

Step 27

Secure Middle and Right Doors together by inserting (2) Carriage Bolts [H] through the (2) upper Holes and securing with Nuts [D]. Another Carriage Bolt [H] goes through the Pivoting Connector and secures with Nut [D]. See Figure 25. Apply a bead of caulk to the joint between doors at the hinge and the top of the doors.

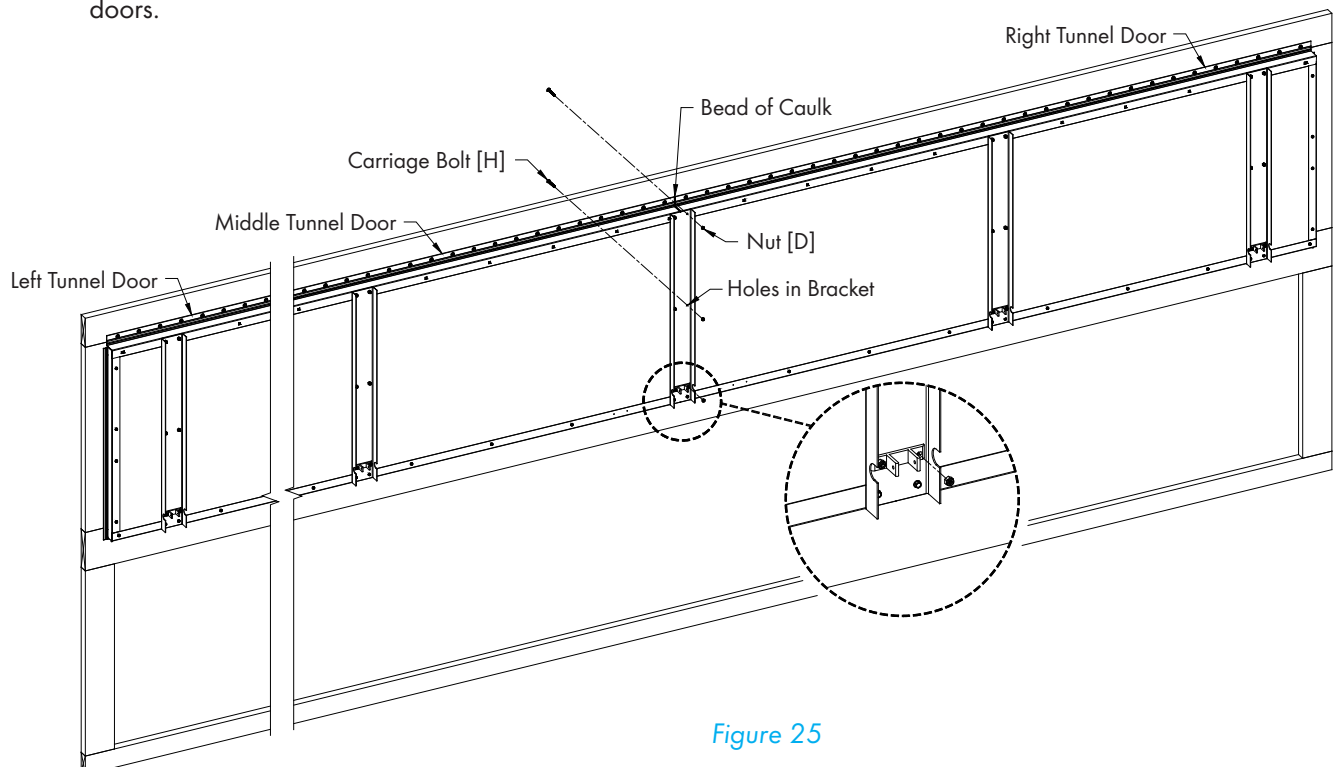


Figure 25

Step 28

To start hanging the 2nd row of Tunnel Doors, snap a chalk line $1\frac{1}{2}$ " up from the bottom edge of the Top Framing piece. Then hold a Left Tunnel Door in place with the Top Edge of the Tunnel Door Hinge aligned with chalk line and the End of the Door overlapping the End Framing by $1\frac{1}{2}$ " and attach Left Tunnel Door to Framing using Polebarn Screws [G]. The first screw should be 2" from the end and space the rest of the screws 4" apart. See Figure 26.

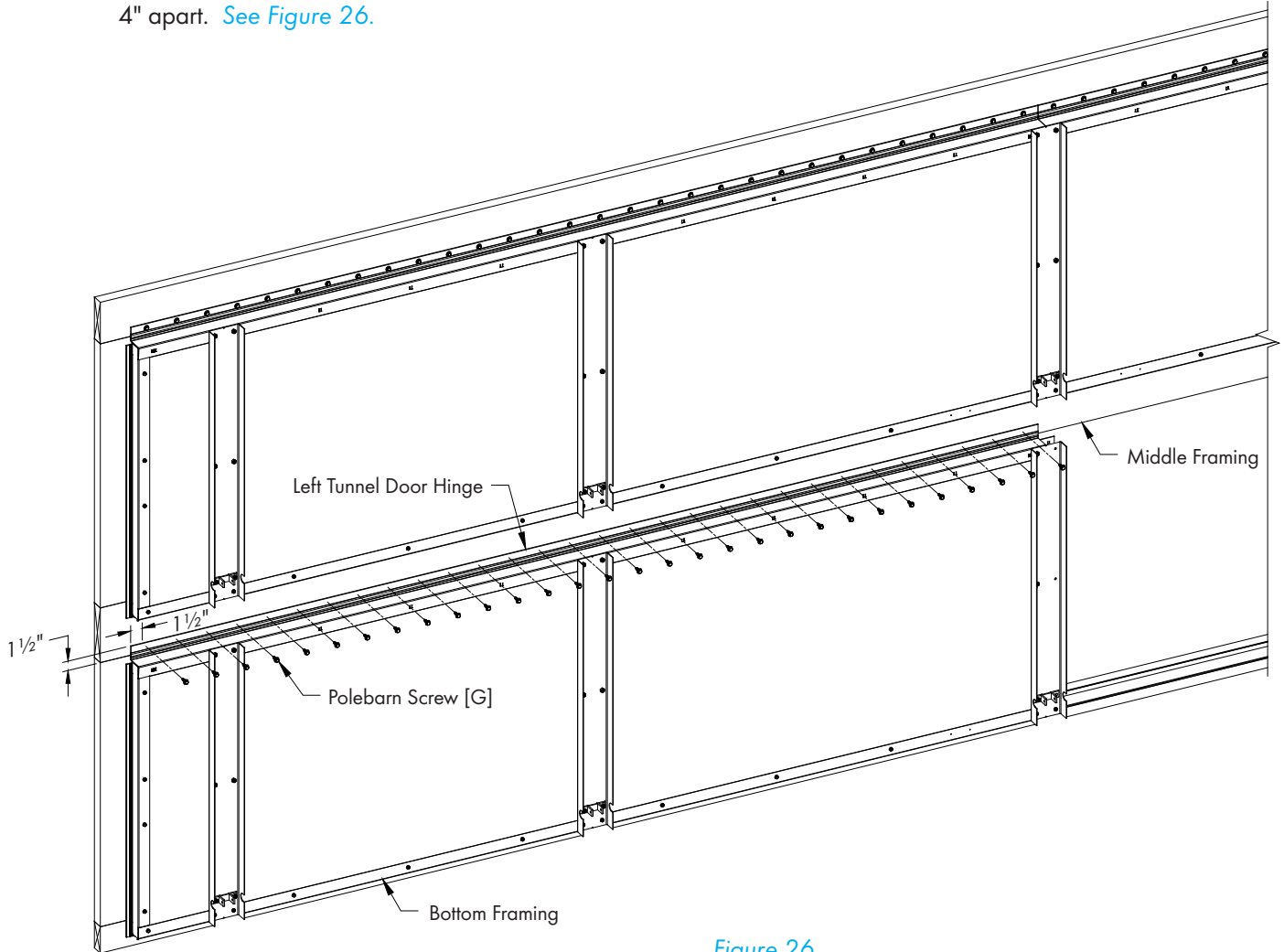


Figure 26

Step 29

Continue installing doors by repeating Steps 20 - 27 for this row of doors.

Step 30

If installing more rows of doors, on the 3rd and 5th rows the Tunnel Door Hinge should be installed $1\frac{1}{4}$ " above the bottom edge of the Middle Framing piece. For the 4th and 6th rows, the Tunnel Door Hinge should be installed $1\frac{1}{2}$ " above the bottom edge of the Middle Framing piece.

For the 3rd and 5th rows follow Steps 19 - 27 and for the 4th and 6th rows follow Steps 28 and 20 - 27.

2.8 Drive Frame Installation

Step 31

Find the Center Actuator Mount Frame [9A]. The Mounting Plate with 4 holes is the Upper Mounting Plate and the one with 2 holes is the Lower Mounting Plate. If actuator will be mounted on left end of the Tunnel Doors, fasten Actuator Mount Plate [10] to Actuator Mount Frame [9A] so that the Actuator mounting surface is on left side of Frame using (4) Bolts [R], (8) Washers [S] and (4) Nuts [F]. See Figure 27A. If actuator will be mounted on right end of the Tunnel Doors, fasten Actuator Mount Plate [10] to Actuator Mount Frame [9A] so that the Actuator Mounting surface is on right side of Frame using (4) Bolts [R], (8) Washers [S] and (4) Nuts [F]. Also, mount the Bearing Adapter Plate [11] to the Frame using (2) Bolts [R], (4) Washers [S] and (2) Nuts [F]. See Figure 27B.

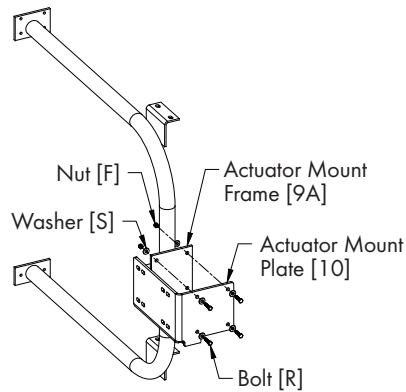


Figure 27A

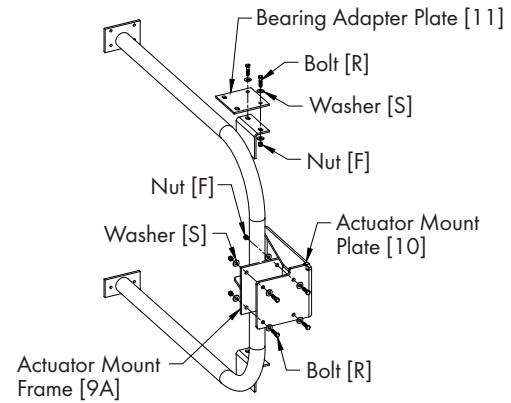


Figure 27B

Step 32

Attach Actuator Mount Frame [9A] so that the top of Upper Mounting Plate is flush with the top of the 2x6 framing and the left edge of Upper Mounting Plate is flush with the left edge of Doors. Secure in place using (6) Lag Screws [A]. See Figure 28.

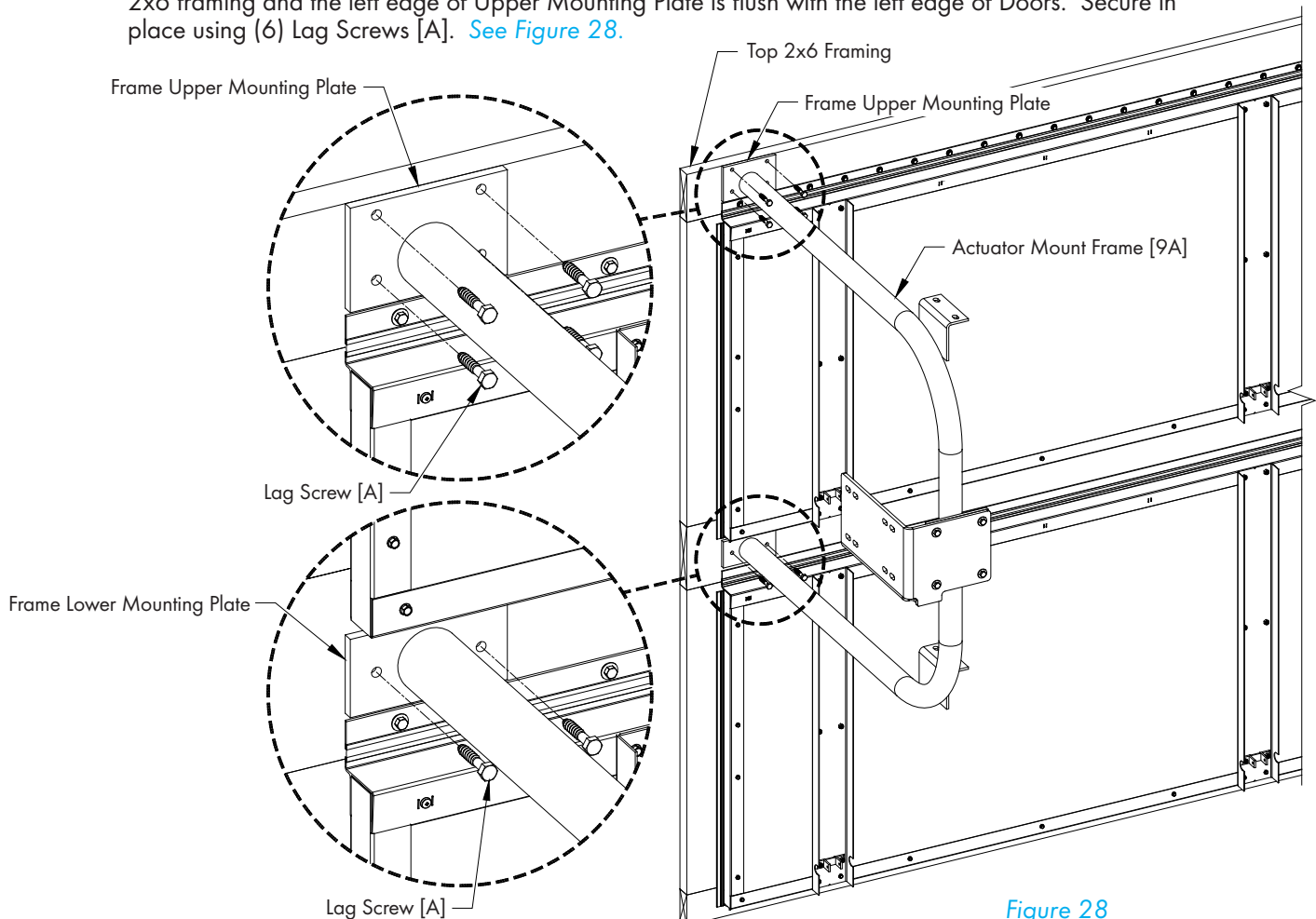


Figure 28

Step 33

Next find a Drive Pipe Support Frame [1]. The first one mounts 9'-0" from the Actuator Mount Frame [9A], with the Upper Mounting Plate flush with the top of the 2x6 Framing. Secure in place with (6) Lag Screws [A].

See Figure 29.

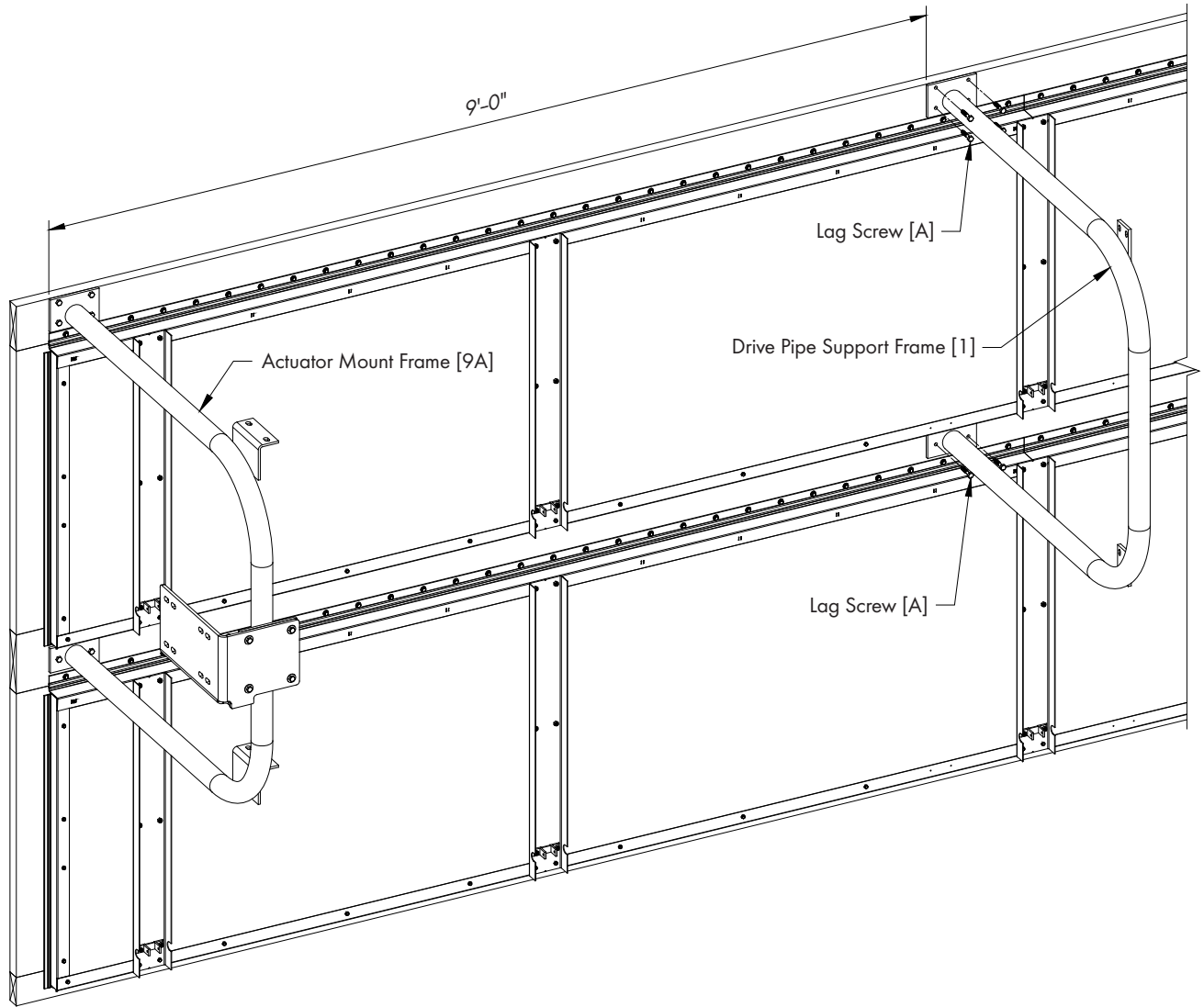


Figure 28

Step 34

All but the last Drive Pipe Support Frame [1] in the system mounts 10'-0" from the previous one, with the Upper Mounting Plate flush with the top of the 2x6 Framing. Secure in place with (6) Lag Screws [A].

See Figure 30.

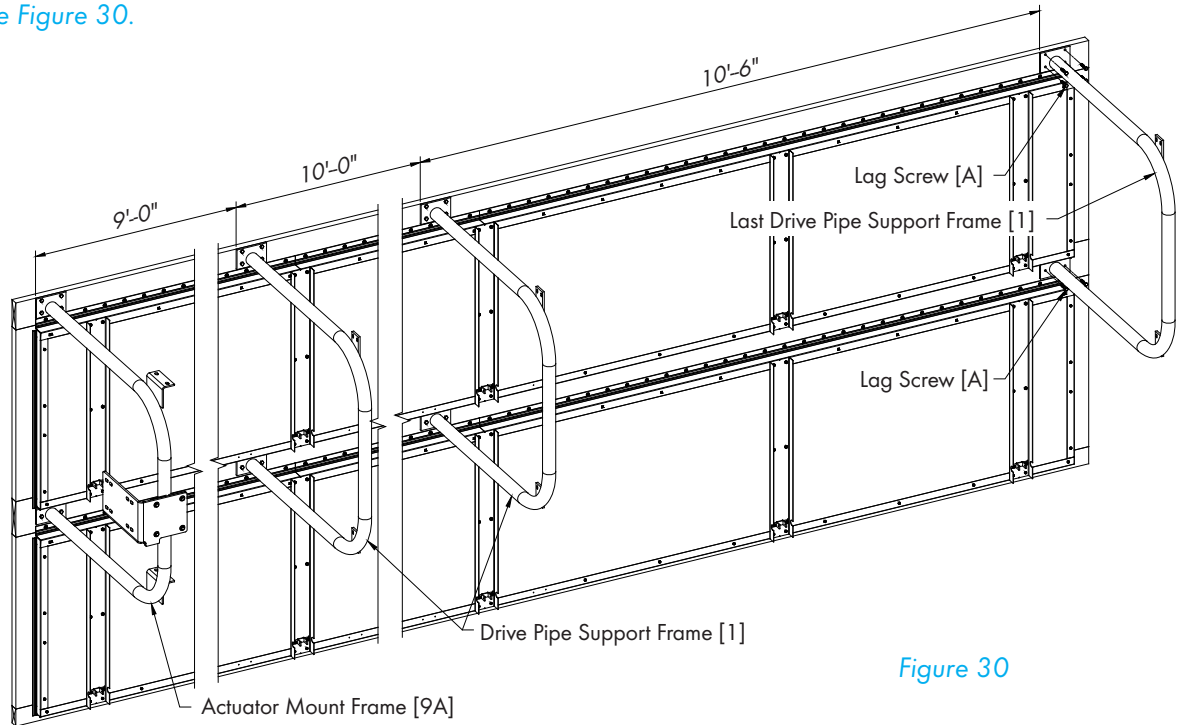


Figure 30

Step 35

The last Drive Pipe Support Frame [1] in the system mounts 10'-6" from the previous one, with the Upper Mounting Plate flush with the top of the 2x6 Framing and the right edge flush with the end of the Doors. Secure in place with (6) Lag Screws [A]. See Figure 31.

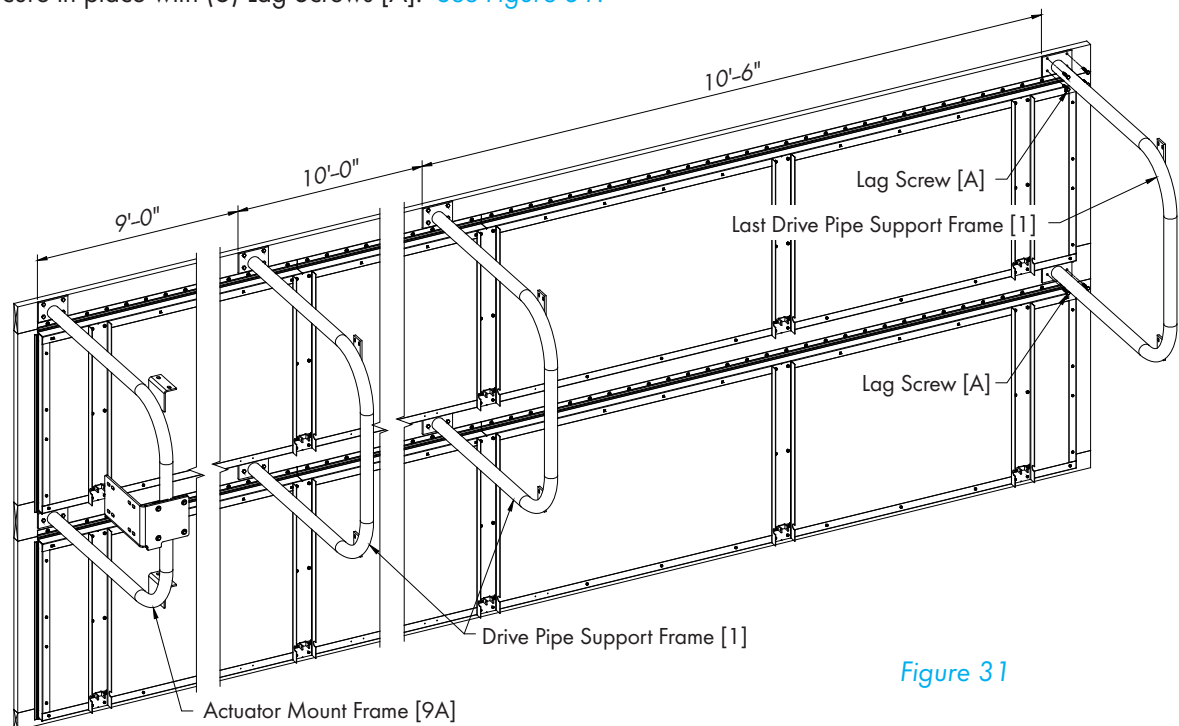


Figure 31

Step 36

If there are multiple rows of doors, install the Actuator Mount Frame [9A] over the 3rd and/or 5th row of Tunnel Doors. The Upper Mounting Plate (4 holes) should mount $\frac{1}{4}$ " above the 3rd and/or 5th row of Tunnel Doors with the left edge of the Mounting plate flush with the end of the Tunnel Door. Secure in place using (6) Lag Screws [A]. See Figure 32. Repeat Steps 33 - 35 to install Drive Frames over the 3rd and 5th rows of Tunnel Doors.

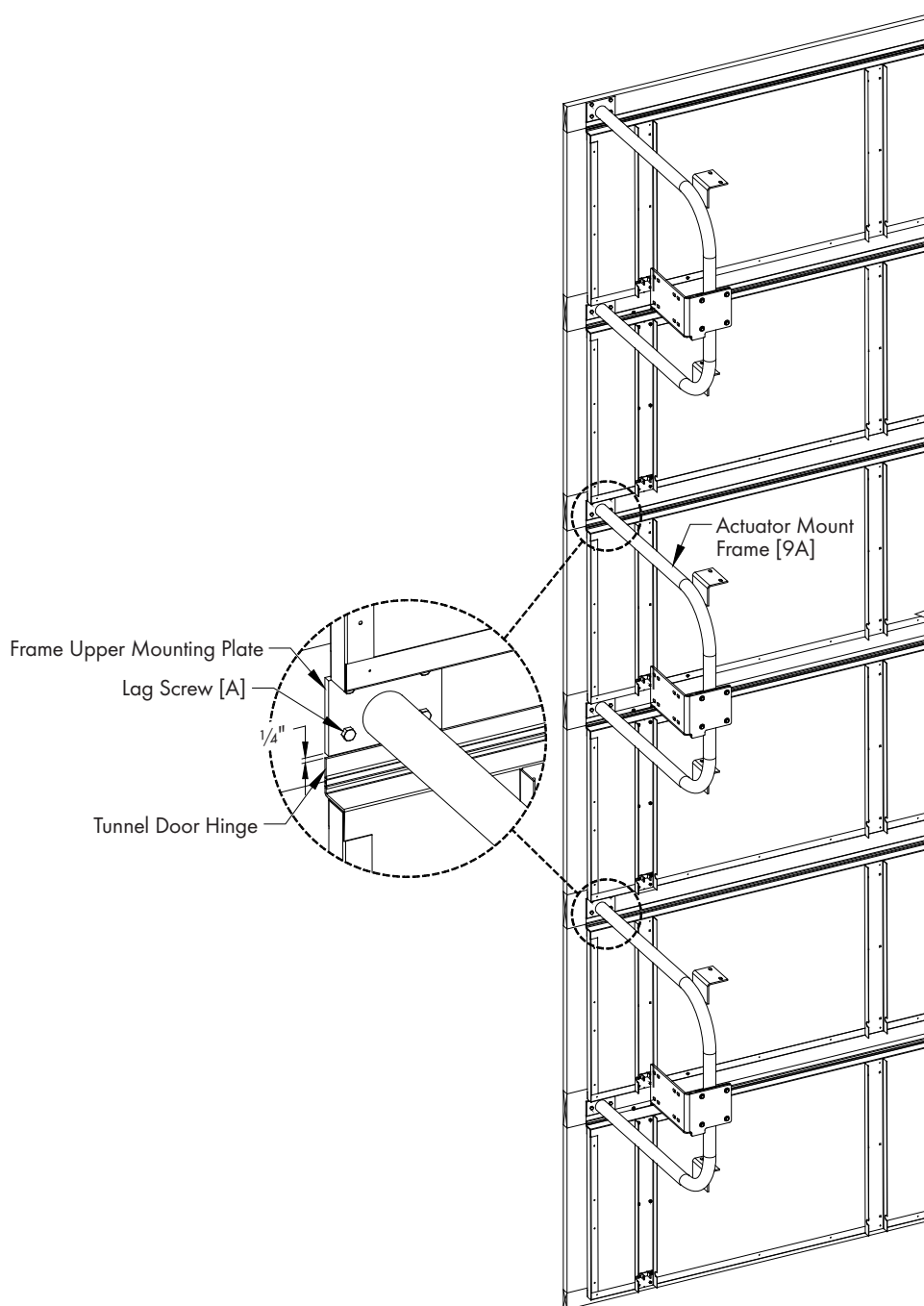


Figure 32

Step 37

For each of the Actuator Mount Frames [9A], install a Bearing [22] on the Bearing Bracket using (2) Bolts [R], (4) Washers [S] and (2) Nuts [F]. See Figure 33. On each of the Drive Frames [1], install a Guide Plate [19] using (2) Bolts [B], (4) Washers [C] and (2) Nuts [D]. See Figure 33. Install bolts snug, but not tight. Align hole in Bearing with hole in Guide Plates. If the Actuator Mount Frame [9A] is mounted on the right end of the system, then install the Bearing [22] to the Bearing Adapter Plate [11]. See Figure 34.

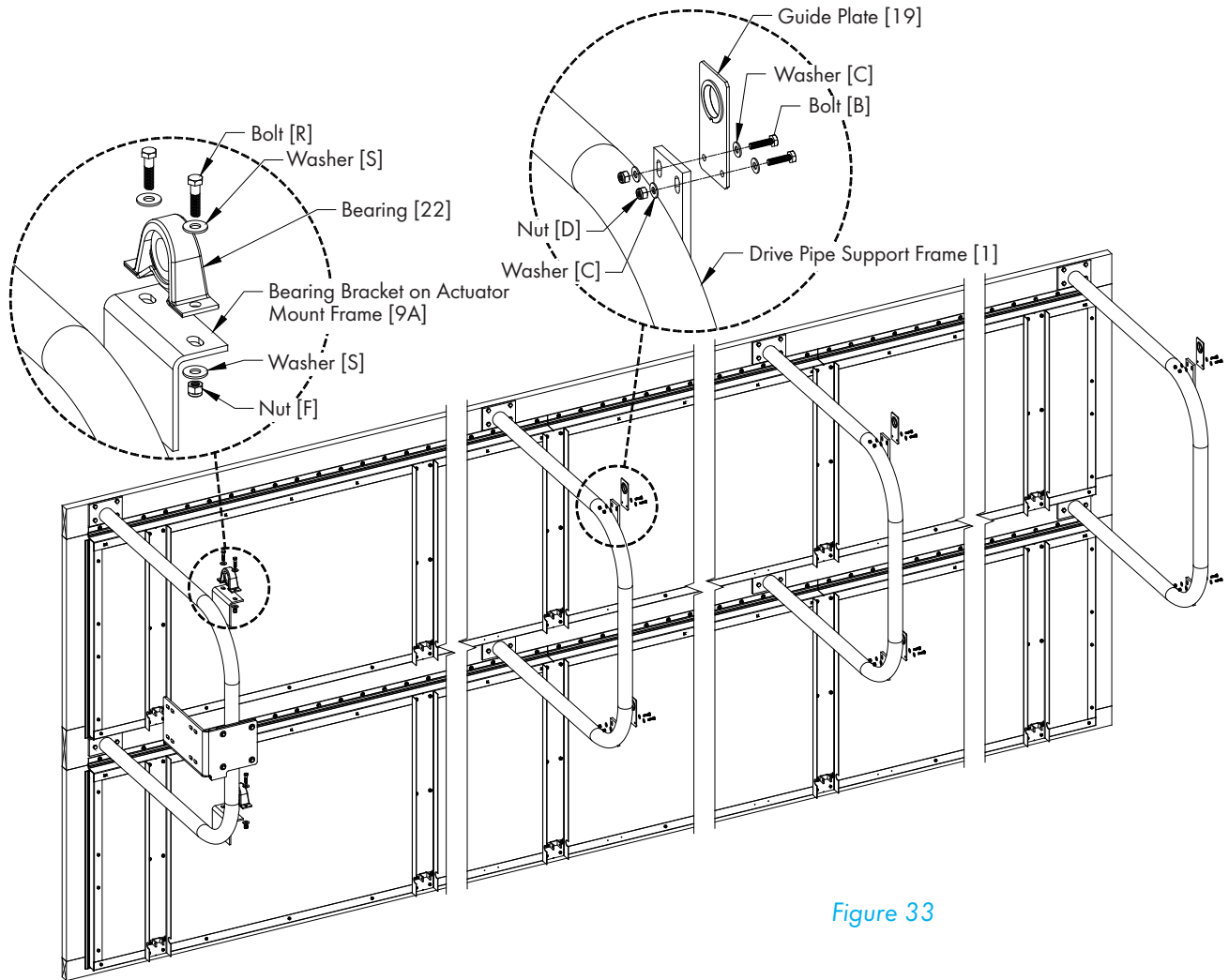


Figure 33

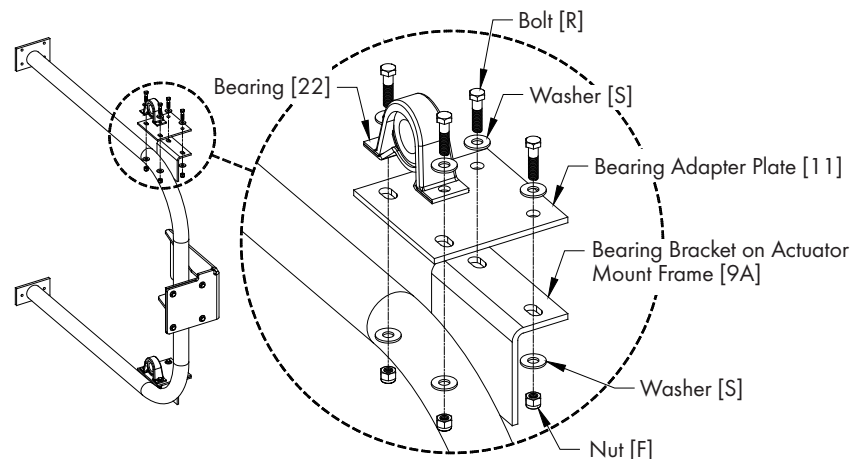


Figure 34

2.8 Drive Pipe Preparation

Step 38

For the 126"L. Drive Pipe [5] that will be at the actuator end, slide the Straight Coupling [21] over the large end of the pipe so that the (2) holes are over the pipe. Then using these holes as a guide, drill (2) pilot holes through the pipe and then drill (2) $1\frac{3}{32}$ " dia. holes through the pipe. [See Figure 35.](#)

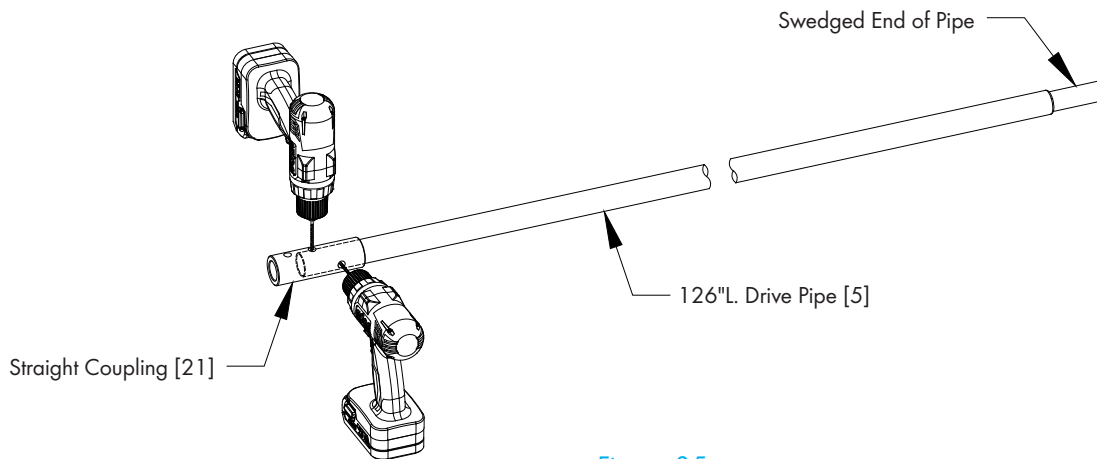


Figure 35

Step 39

Find the next Drive Pipe [5] and slide the large end over the swaged end of the previous pipe and drill a $1\frac{3}{32}$ " dia. hole through the 2 pipes. Continue this for all the pipes in one row. [See Figure 36.](#) Repeat [Steps 38 and 39](#) for each row of doors in the system. Set all drilled pipe aside for later installation. It may be helpful to mark each pipe as it is drilled so that when they are installed the pipes that are pre-drilled together will be installed together.

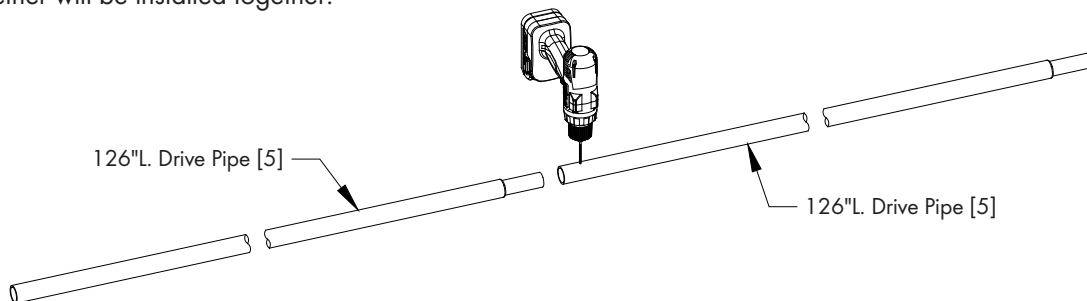


Figure 36

Step 40

Find one of the 63"L. Drive Pipe [14] and cut an 18" and 28" piece from it. If a 3 row system is being installed cut the 18" piece off and leave the remainder whole. [See Figure 37.](#)

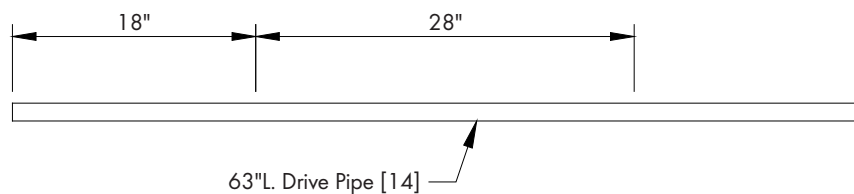


Figure 37

Step 41

For the 18"L. and 28"L. Drive Pipe [14] cut in the previous step, slide a Straight Coupling [21] over one end of the pipe so that the (2) holes are over the pipe. Then using these holes as a guide, drill (2) pilot holes through the pipe and then drill (2) $1\frac{3}{32}$ " dia. holes through the pipe. Next fasten the Straight Coupling [21] to Pipe using (2) Bolts [E] and Nuts [F]. See [Figure 38](#).

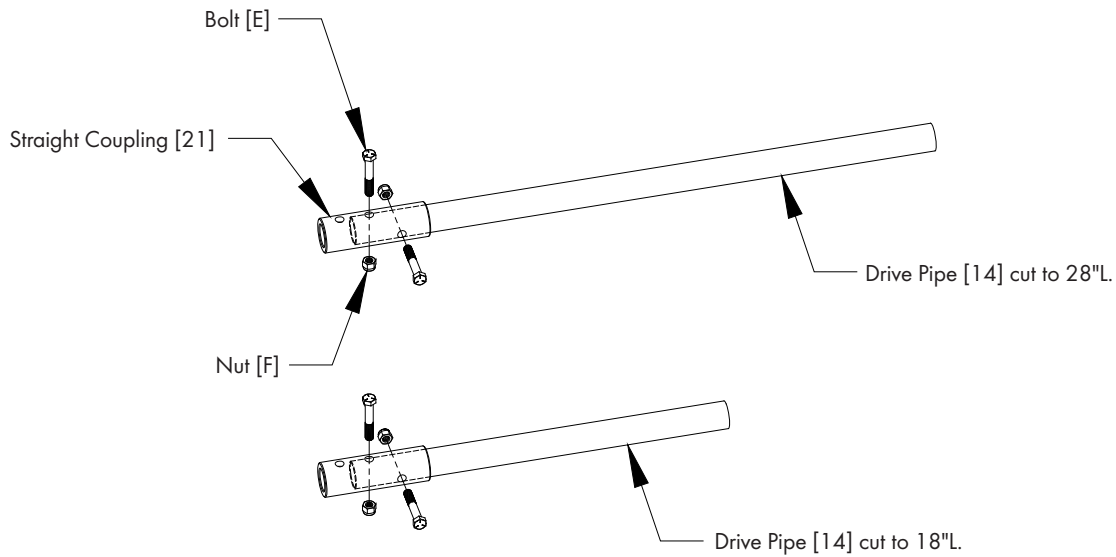


Figure 38

2.9 Drive Pipe Installation**Step 42**

Find the Pinion Gear [L1] and install (2) Set Screws [L3]. See [Figure 39A](#). Slide (2) Pinion Gear with Set Screws onto the first pre-drilled Drive Pipe [5]. See [Figure 39B](#). Each Pinion Gear will eventually line-up with each Door Support CHNL Bracket [6].

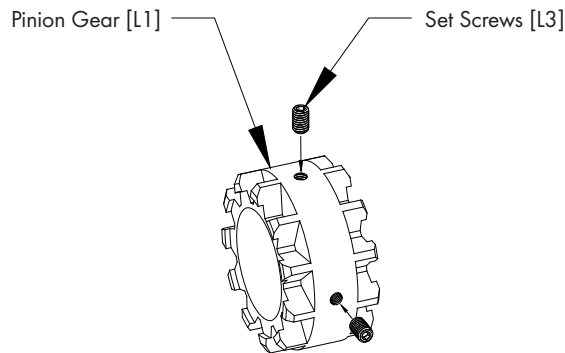


Figure 39A

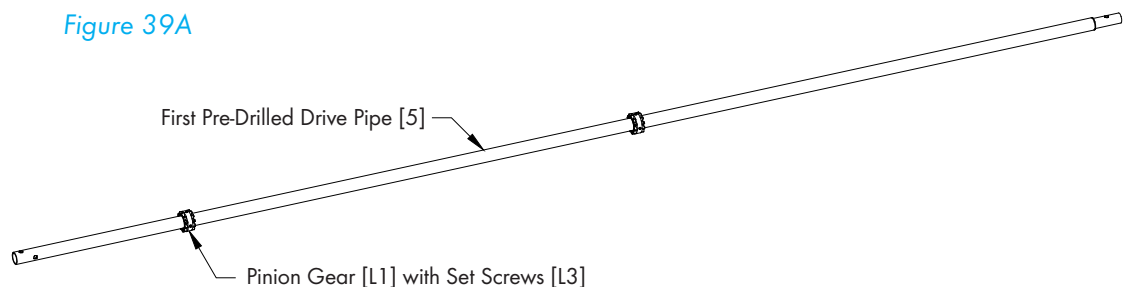


Figure 39B

Step 43

For the first Drive Pipe [5] with Pinion Gears, slide the swaged end of the Drive Pipe through the Bronze Bushing in Guide Plate [19]. Then slide the opposite end through Bearing [22] so that the 2 Pinion Gears are between the Bearing and the Guide Plate with the (2) pre-drilled holes on same side of the Bearing as the Actuator Mount Plate [10]. See Figure 40.

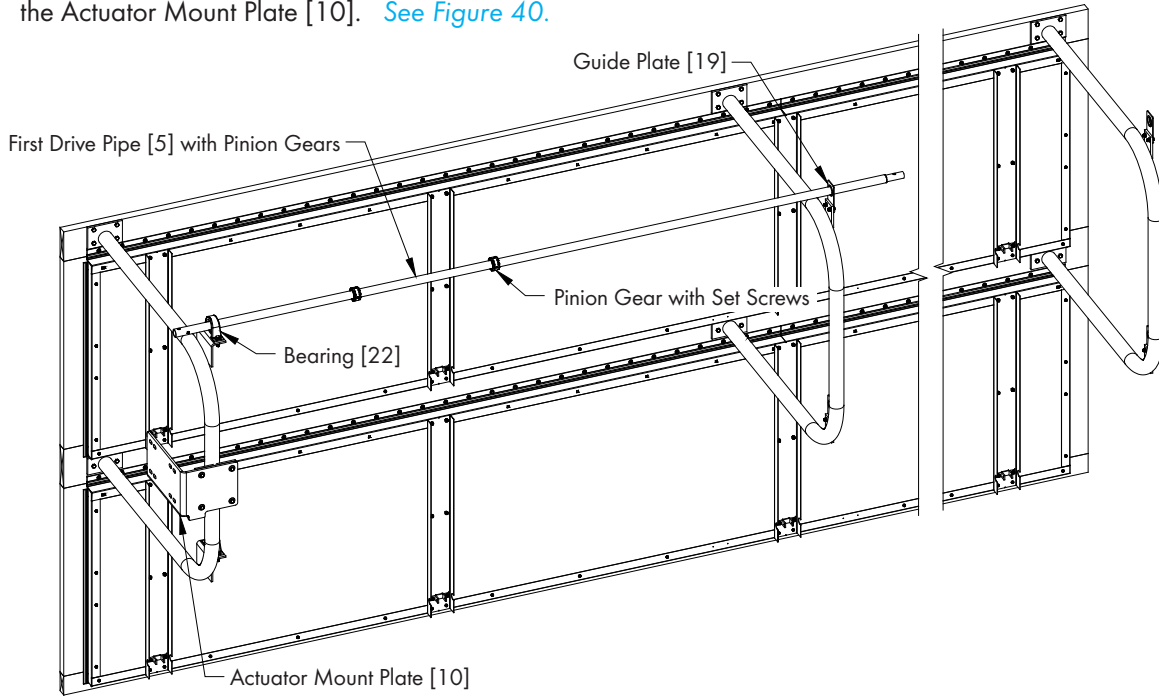


Figure 40

Step 44

For next Drive Pipe [5] slide (2) Pinion Gears onto Pipe, then slide the swaged end of the Drive Pipe through the next Bronze Bushing in Guide Plate [19]. Then slide the opposite end onto the swaged end of the previous pipe. If needed slide one of the Pinion Gears past the joint in the pipes to align with the Door Support CHNL Bracket [6]. Align the pre-drilled holes and secure pipes together using Bolt [E] and Nut [F]. See Figure 41. Repeat this step for all but the last Drive Pipe [5].

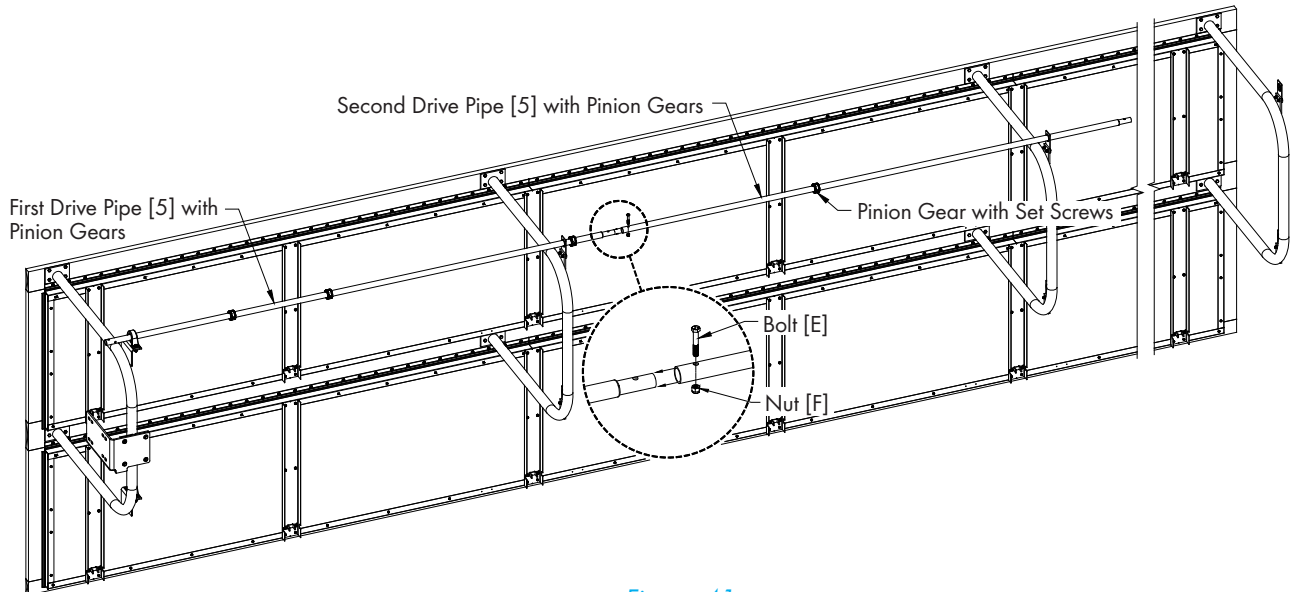


Figure 41

Step 45

For the last Drive Pipe [5] slide (3) Pinion Gears onto Pipe, then slide the swedged end of the Drive Pipe through the Bronze Bushing in last Guide Plate [19]. Then slide the opposite end onto the swedged end of the previous pipe. If needed slide one of the Pinion Gears past the joint in the pipes to align with the Door Support CHNL Bracket [6]. Align the pre-drilled holes and secure pipes together using Bolt [E] and Nut [F]. See Figure 42. Cut excess Drive Pipe so that only 3" extends past the last Guide Plate. Then Insert Black Plastic Hole Plug [23] into end of pipe. See Figure 42.

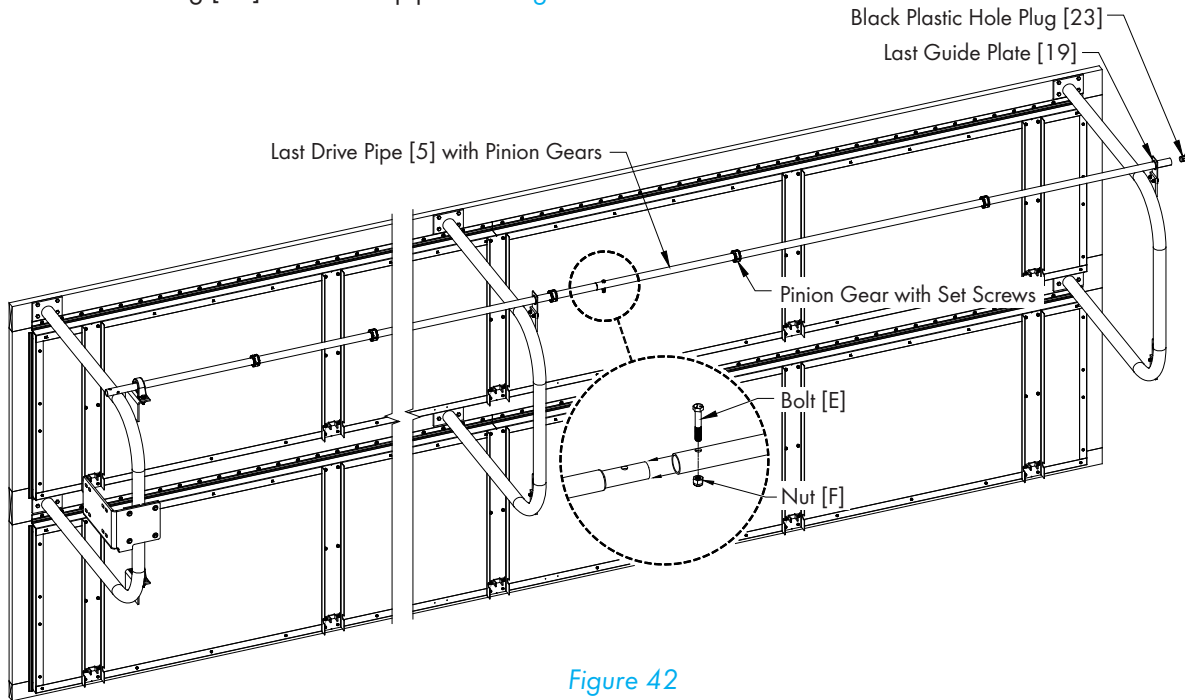


Figure 42

Step 46

For the next rows of doors repeat Steps 42 - 45, so that each row of doors has a Drive Pipe with Pinion Gears. See Figure 43.

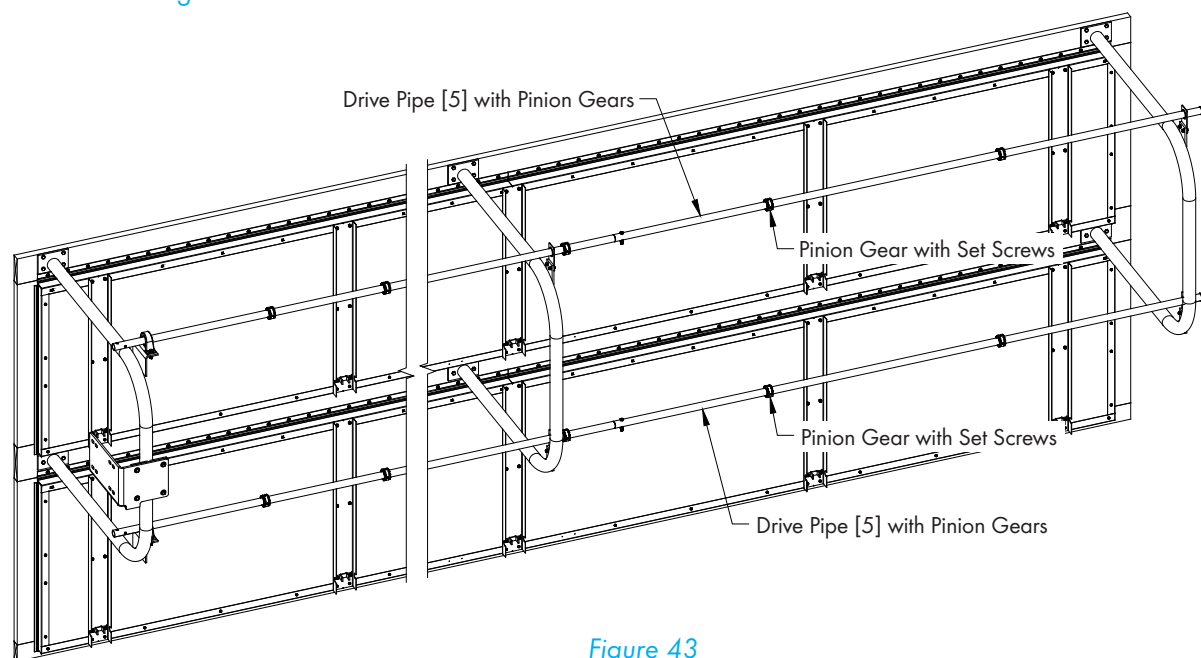


Figure 43

Step 47

Snap a Black Plastic Retainer [L2] over each Pinion Gear with Set Screws. See Figure 44.

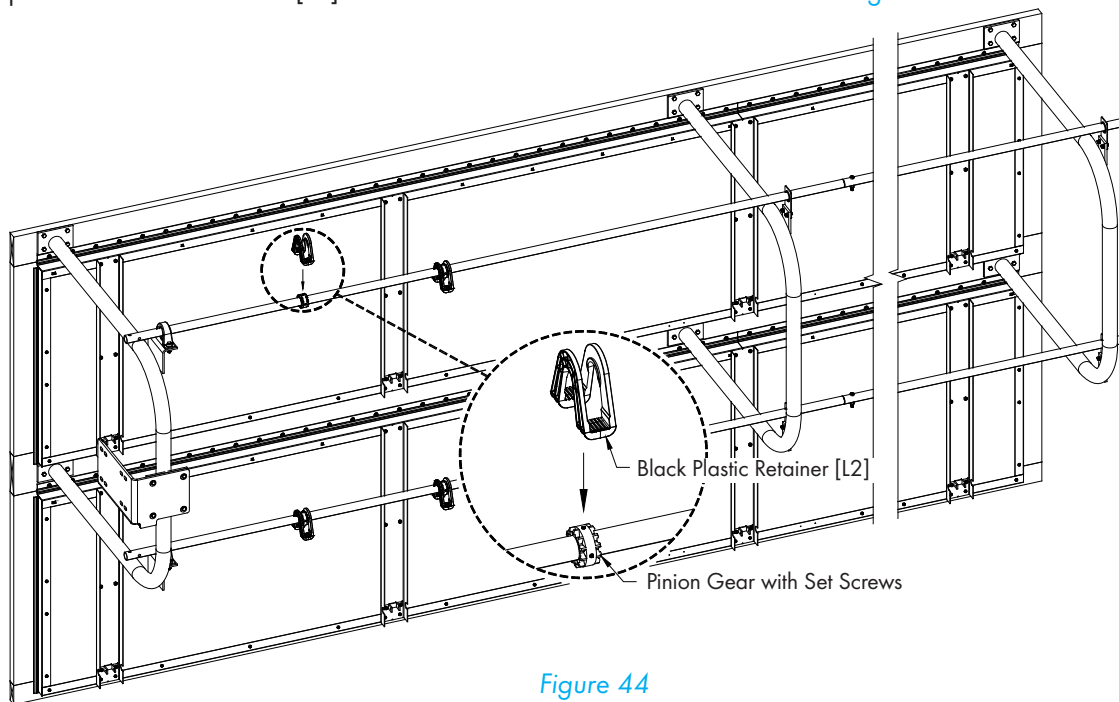


Figure 44

Step 48

Align each Plastic Retainer/Pinion Gear assembly with a Door Support CHNL Bracket on the Door below the Drive Pipe the Plastic Retainer/Pinion Gear assembly is installed on. See Figure 45.

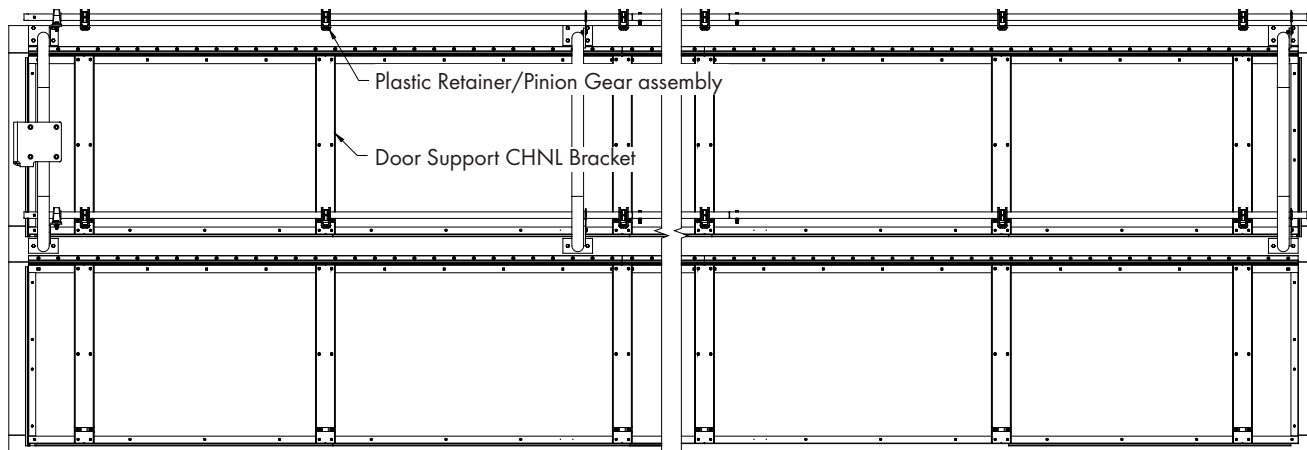


Figure 45

Step 49

Rotate one of the Plastic Retainer/Pinion Gear assemblies 90° so that the flat part is towards the door and insert end of Straight Rack [4] with no teeth into Retainer/Gear Assembly and slide it in until the teeth on the Straight Rack [4] engage the Pinion Gear. Rotate the Straight Rack towards the bottom of the door and fasten the end of the Straight Rack [4] to the Pivoting Connector [M] using Clevis Pin [N] and Hairpin Cotter [P]. See Figure 45.

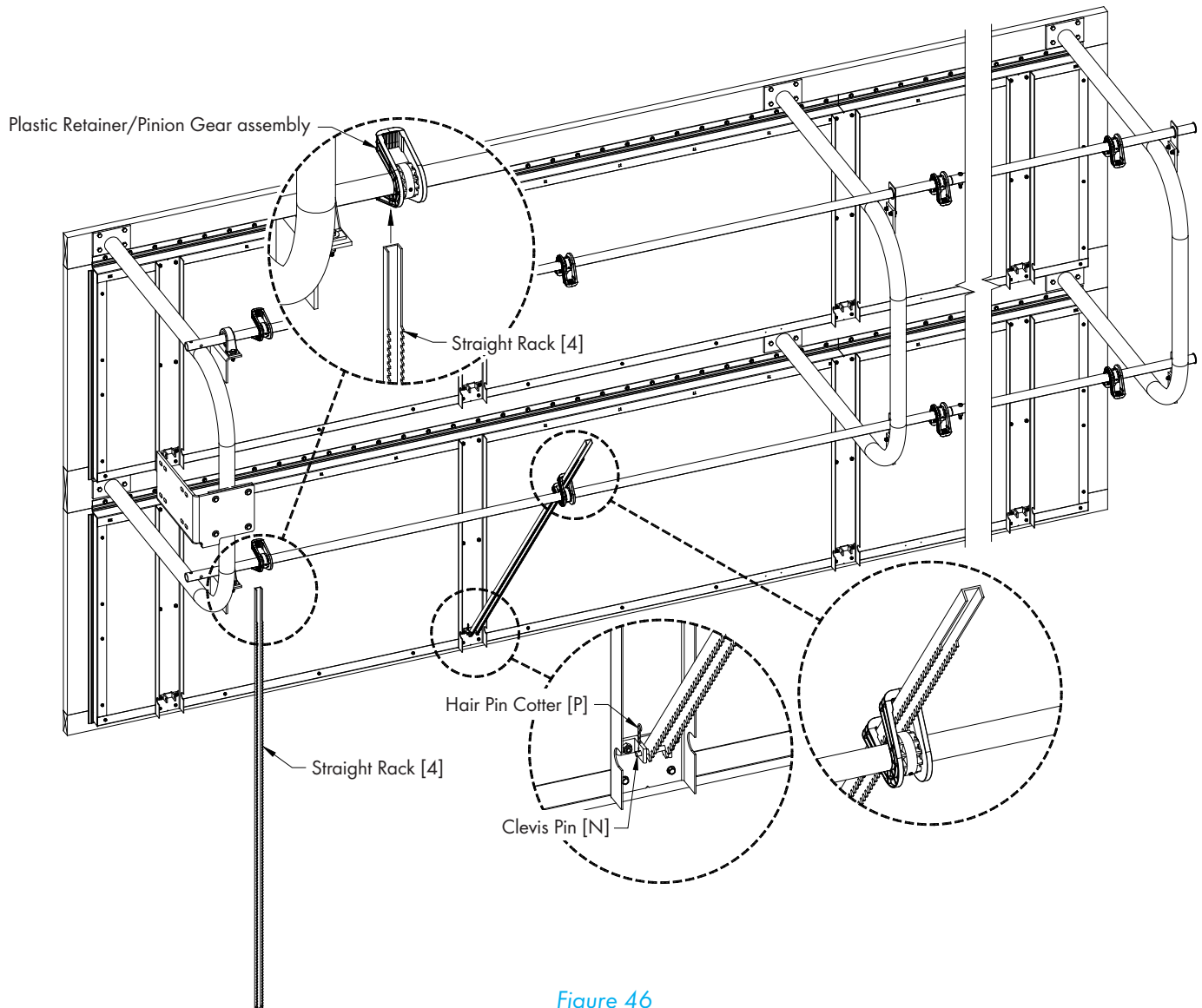


Figure 46

Step 50

Repeat Step 49 until each Plastic Retainer/Pinion Gear Assembly has a Straight Rack in it and Straight Rack is attached to a Pivoting Connector. See Figure 47.

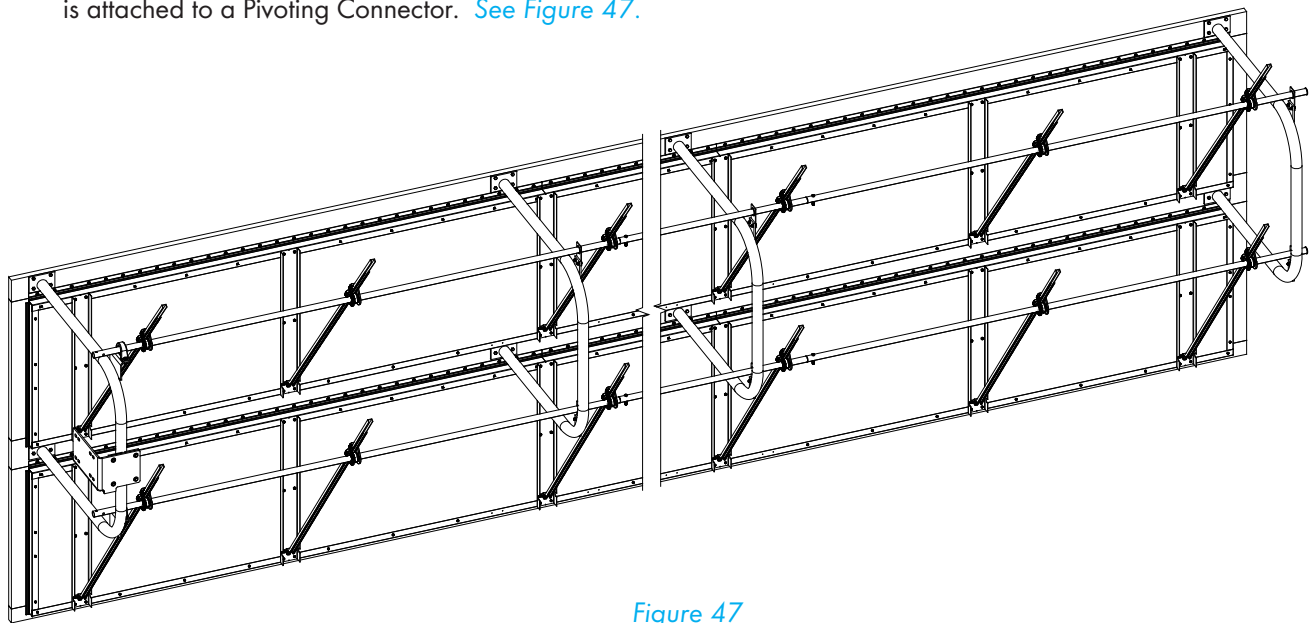


Figure 47

2.10 Actuator Installation

Step 51

Attach Actuator to Actuator Mount Bracket using (4) Bolts [R], (8) Washers [S] and (4) Nuts [F]. See Figure 48. Make sure the Shaft extending from the Actuator is aligned with the Drive Pipe.

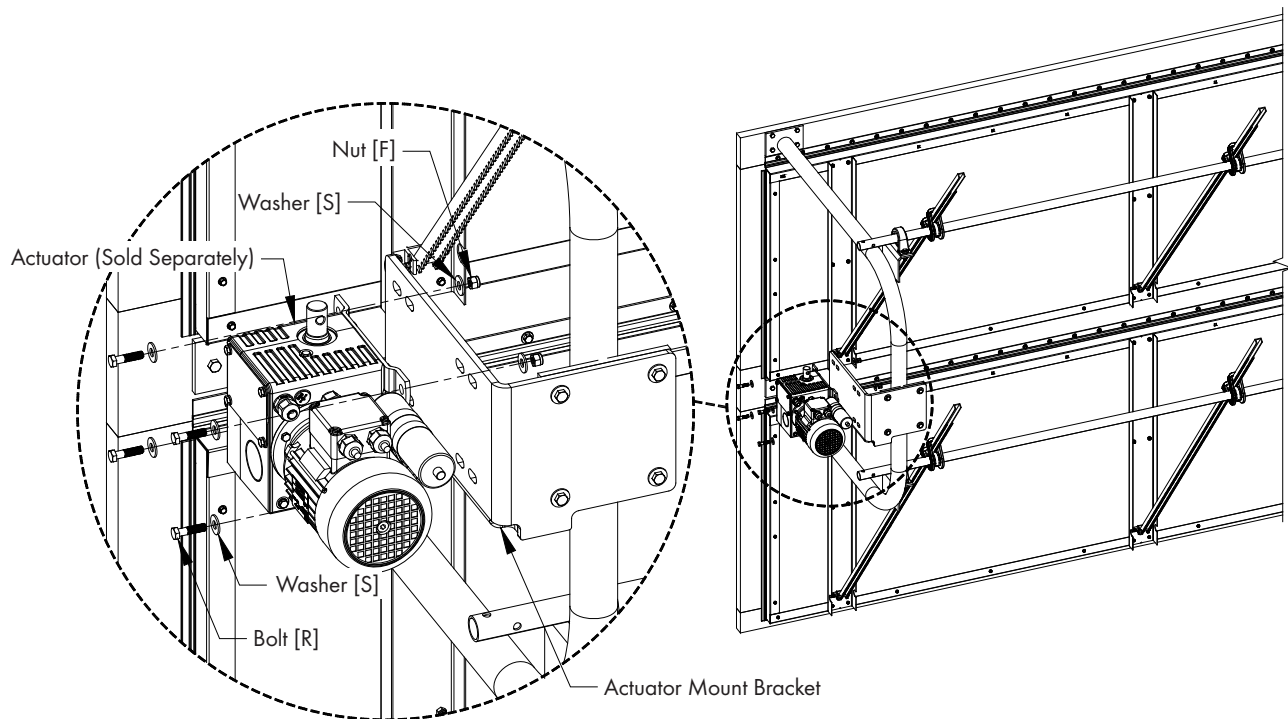


Figure 48

Step 52

Locate the 18"L. and 28"L. Drive Pipe with Straight Coupling, prepared in Step 41. Slide one Gearbox [18] onto each Drive Pipe in the orientation shown in [Figure 49](#). Make sure the arrows on side of Gearbox point toward main Drive Pipe and the arrow on the shaft of Gearbox point down. Then Insert the Gearbox shaft into the Main Drive pipe and the Straight Coupling over the shaft of the Actuator. [See Figure 49](#).

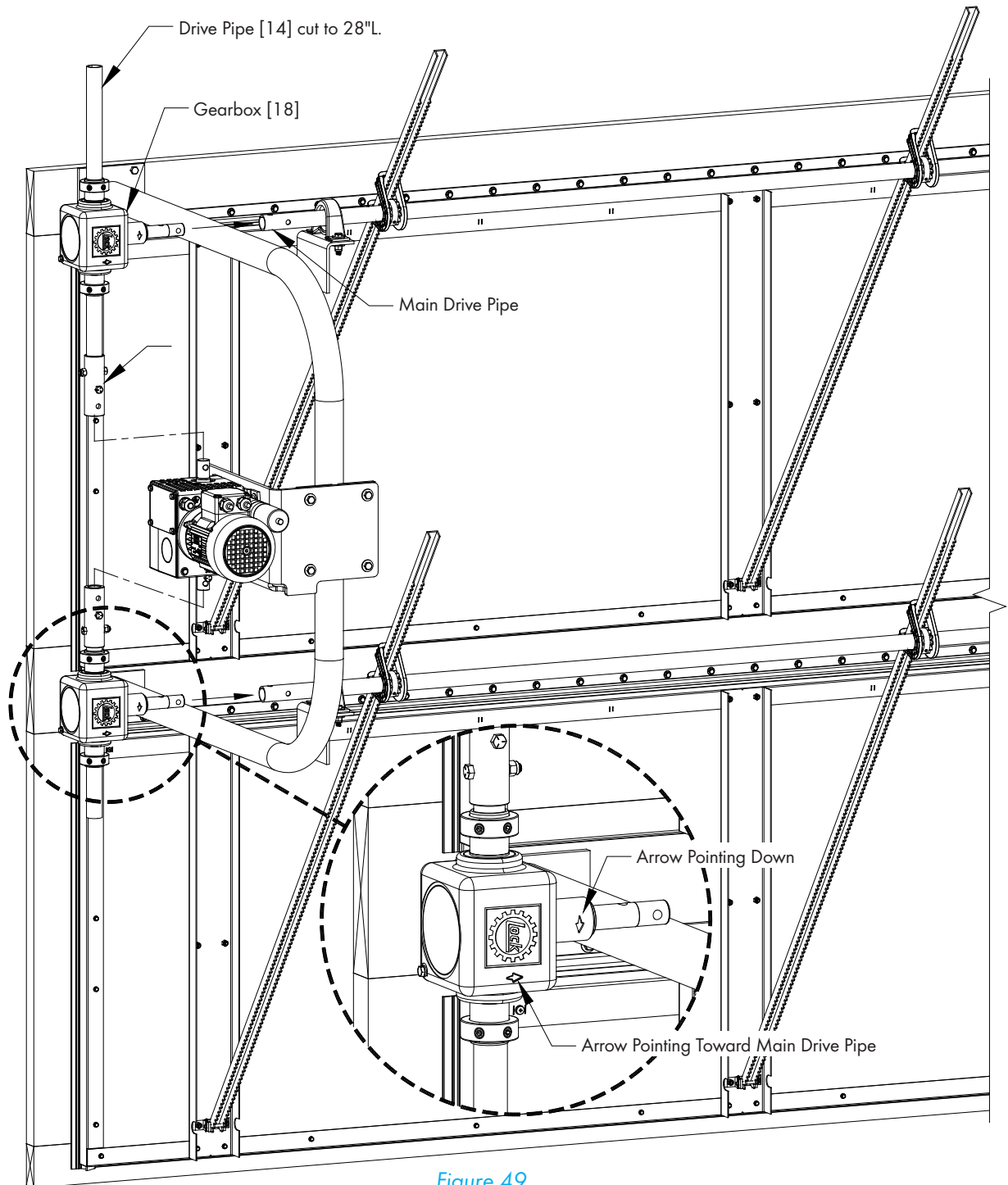


Figure 49

Step 53

Align the holes in the Main Drive Pipe with the holes in the Shaft of Gearbox and the hole in the Straight Coupling with hole in Shaft of Actuator and secure with (3) Bolt [E] and Nut [F]. See Figure 50.

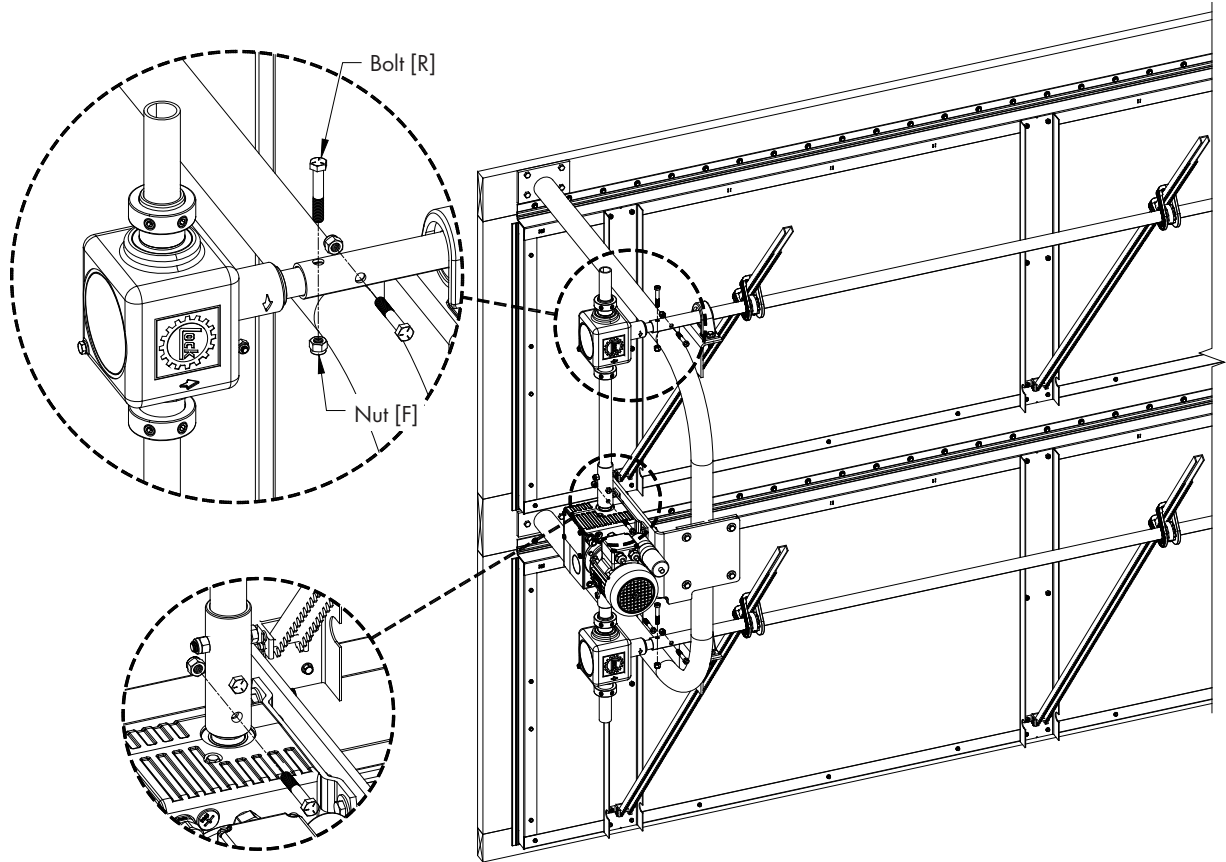


Figure 50

Step 54

Tighten the Set Screws on the Gearbox Collars, then tighten the Set Screws on each Pinion Gear on the Drive Pipe. It may be necessary to unhook the Straight Rack from the Pivoting Connector, slide the Straight Rack out of the Plastic Retainer to be able to rotate the Pinion Gear slightly to be able to access both Set Screws. Then slide the Straight Rack back into the Plastic Retainer and reconnect it to the Pivoting Connector. See Figure 51.

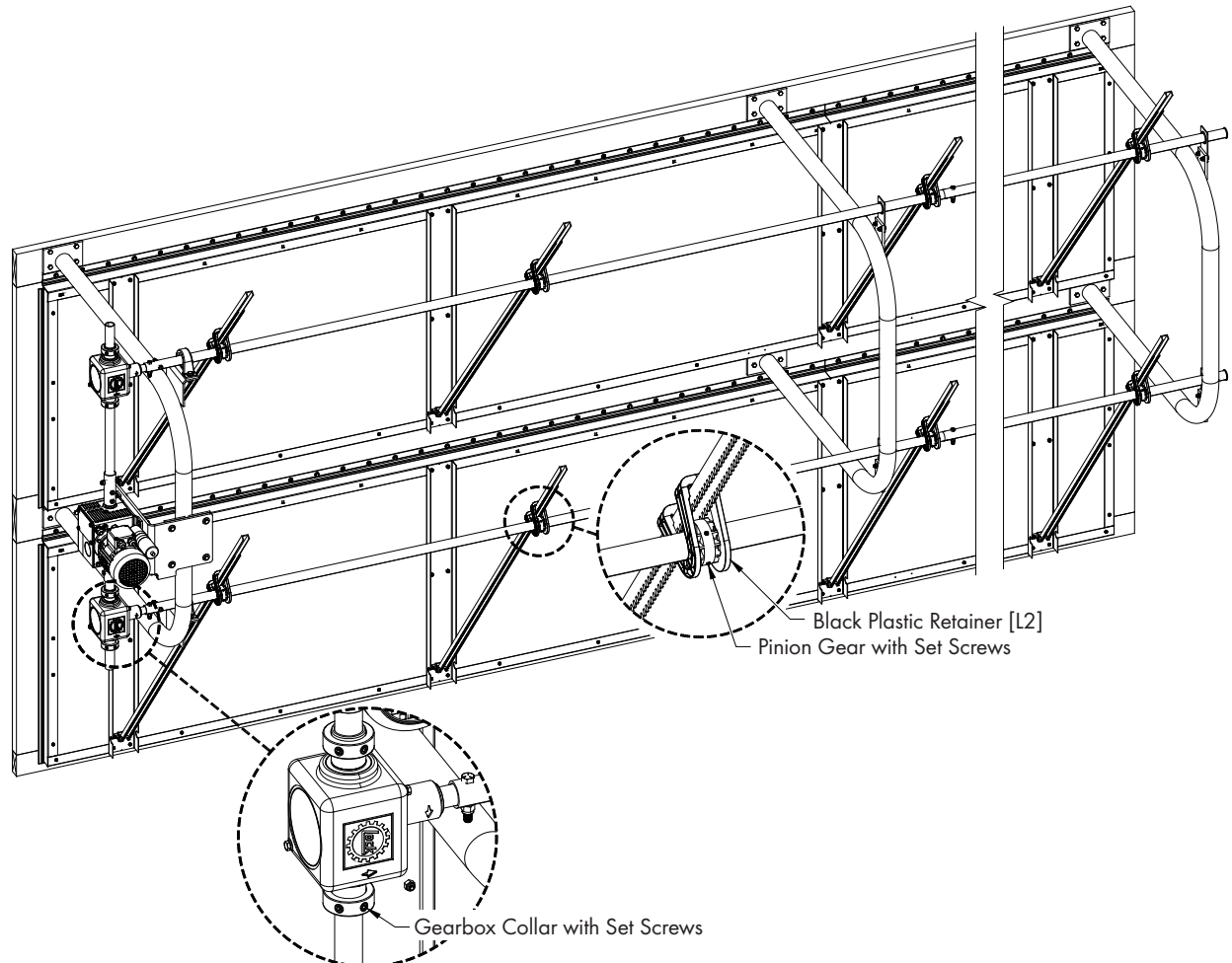


Figure 51

Step 55

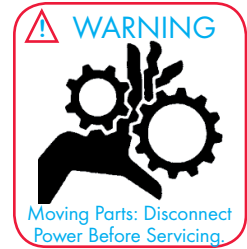
Before operating the system, use Tubes of Grease [24] provided to lightly grease the Pinion Gear and the back of the Straight Rack where it slides through the Black Plastic Retainer.

See Actuator Manual for wiring instructions.

3.1 Maintenance

The following inspection and cleaning procedures should be performed monthly:

- 1) **STRAIGHT RACKS:** Check for wear on the rack, especially on the teeth and the pinion gear. Reapply Grease to the Pinion Gear and Straight Rack once a year.
- 2) **CLEAN** regularly for best results:
 - **ACTUATOR/GEARBOXES:** Remove any dust accumulation from actuator using a brush or cloth. (DO NOT use a pressure washer).
 - **STRAIGHT RACKS:** Carefully clean dust from racks and frame so that racks open and close doors freely. A brush or cloth should be used.
 - **DOORS:** Clean any dust or feathers from doors using a brush.
- 3) **CHECK FASTENERS:** For safety, all fasteners should be inspected 1 month after initial operation and yearly thereafter. Tighten any loose connections.
- 4) **INSPECT INLET CONTROL:** With power disconnected, inspect all electrical connections. Wiring should be secure and in good condition. Remove any dust build-up from control case and sensor using a soft brush or cloth. **NEVER CLEAN ELECTRICAL EQUIPMENT WITH A PRESSURE WASHER!**



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HORIZON Tunnel Door System is developed and produced by Munters Corporation, Lansing, Michigan U.S.A. 1-800-227-2376



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